The background of the cover is a photograph of a desert garden enclosed in a large, arched glass dome. The garden is filled with various desert plants, including several large, rounded, reddish-brown succulents in the foreground, a tall, spiky agave-like plant in the center, and various cacti and shrubs in the background. The ground is dry and sandy. The glass dome has a metal frame, and the sky is visible through the glass. The title 'THE SONORAN QUARTERLY' is overlaid on the top left of the image.

THE SONORAN QUARTERLY

For members and friends of the Desert Botanical Garden, Phoenix, Arizona March 2008/Volume 62, No. 1

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From So Simple a Beginning



Photograph by Adam Rodriguez

Not long after you receive this copy of the *Sonoran Quarterly*, you will be able to come to the Garden to see for yourself our incredible new Cactus and Succulent Galleries. Even as we go to print, these new galleries are taking shape—steel beams go up one week, vaulted ceilings rise the next, and majestic new cacti and succulents go into the ground soon thereafter.

Many of the stages involved in creating these new galleries are documented in this issue, and I hope the stories and photographs we have provided allow you to share the excitement all of us here at the Garden feel. This is a pivotal period in our history: we are on the verge of entering a new era in the artistic display and educational interpretation of desert plants.

Collaborating with the Garden's senior staff and curators to create these new galleries has been one

of the most rewarding activities I have undertaken since coming to the Garden in 2001. Our horticulturists' and scientists' knowledge is extraordinary, and the creativity demonstrated by our gallery design team has been an inspiration to me, the Garden's Board, and our many many volunteers.

The interpretive message of both of these new galleries explores how cacti and other succulent plants are adapted for survival in arid regions, and how the process of evolution has expressed itself in these incredibly diverse plants. Being just a little rusty in such matters (after all, it has been 30 years since I taught biology) I decided to go back and consult the definitive source on the theory of evolution—Charles Darwin's *The Origin of Species*, first published in 1859.

I let myself get lost in Darwin's writings, and luxuriated in re-reading passages I had not seen for a long time. I think the insight Darwin brought to our understanding of biology resonates today just as strongly as it did in 1859, and his thoughts and words inspire me more each time I read them.

Darwin ended *The Origin of Species* this way: ... *from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.*

I think this passage serves as a perfect metaphor for the diversity of life on Earth, for the remarkable progress our Garden has made since its inception 69 years ago, and for the creative process that began five years ago when we first began to imagine what our cactus and succulent houses could become, and which has resulted in the wonderful new galleries that will unveil this spring. 🌵

Ken Schutz,
*The Dr. William Huizingh
Executive Director*



Photograph by Renee Immel

Mountain aloe, *Aloe marlothii*, in Succulent Gallery.

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ON OUR COVER

The new Sybil B. Harrington
Succulent Gallery near completion.

Photograph by Adam Rodriguez
adamsphoto@cox.net



Tending the Garden

CAMPAIGN TO ENDOW THE FUTURE

The Sybil B. Harrington Cactus and Succulent Galleries

Open to the Public this Spring

by Elaine McGinn,
Director of Planning and Exhibits

In April the Desert Botanical Garden will usher in a new era of exhibition and display with the opening of the Sybil B. Harrington Cactus Gallery and the Sybil B. Harrington Succulent Gallery. While recognized throughout the garden world for our cactus and succulent collections, these new galleries will enable the Garden to tell a more complete story about both its collection and the evolution of desert plants. Cacti and succulents from around the world will be showcased through exceptionally designed horticultural displays that are engaging, inspiring, and relevant to the Desert Botanical Garden experience. An intrinsic part of the Desert Botanical Garden's living collections, they will be a new and exciting aesthetic attraction for all visitors.

The original Cactus House, made of aluminum lath, was built in 1950. Its purpose was to display the more tender cactus and leaf



succulents that required shade for survival in the harsh Sonoran Desert climate. In 1965, an adjacent Succulent House was built to allow for separate cactus and succulent presentations, with the intention of expanding each collection.

Through the years, as the collections grew, the structures and displays became outdated and did not meet current Garden aesthetics standards. The planting beds were in need of enhancements through contouring and hardscaping elements. Interpretive elements had been retrofitted to the existing plant palette and structure, and many of the plants had matured beyond the roof capacity, necessitating a massive renovation plan.

Rather than renovate the old structures, the Garden developed a plan to create dynamic new exhibits of cacti and succulents on the footprint of the old shade house spaces. Funded by the *Tending the Garden* Campaign, the new exhibits will be an essential element of the overall plan to present a series of museum-quality outdoor galleries that will showcase the Garden's unsurpassed desert plant collection.

A diverse team of staff, volunteers, and designers has worked for many months to shepherd this important project to completion, coupling broad expertise with a shared vision for the Garden. While staff and volunteers removed the cactus and succulent collections from each structure in preparation for the construction of their new homes, the exhibit team met with award-winning landscape designer Steve Martino, FASLA, to plan and design the new exhibit galleries. The goal was to create an exciting new attraction for visitors through dazzling displays of cacti and succulents that will best present the great diversity of form, texture, and color found in each of these collections.



Original aluminum lath Cactus House.

Photograph by Adam Rodriguez

Martino's final design was inspired by the simplicity of the old greenhouse structures. It uses steel mesh as the arching canopy to provide shade for the plants, support columns painted in a desert-hued red to accentuate the color and textures of the plants, and takes advantage of the vistas that are so distinctly a part of the Desert Botanical Garden experience.

During the planning phase we focused on the collections themselves—the plants' requirements for sun and shade, water and drainage, location and size. Additional considerations were given to how the new exhibits would relate to other display areas within the Garden, hardscape and site features, audience expectations and

amenities, and interpretive formats. The direction established for design development was clear: design new cactus and succulent structures that complement each other, that provide exhibit areas to meet horticultural, research, and educational needs, and that create a dynamic venue for display and interpretation.

Throughout the planning process the needs of the plants have been our guiding principle in the overall design for the galleries. For example, many plants require enough space to grow to a height of twenty feet or more when mature. The final design of the shade structures, there-



Finishing the screens on new steel structures.

Photograph by Renee Immel

SYBIL B. HARRINGTON Cactus and Succulent Galleries



Rendering of Cactus Gallery



Rendering of Succulent Gallery

fore, reaches a peak height of twenty-eight feet. Also, Garden curators specified horticultural zones within each gallery to accommodate plants with similar growing requirements, regardless of their geographical origin. These zones will serve as a vital component in the galleries, helping to ensure that the plants thrive. The zones will also allow many specimens that have spent years in Garden greenhouses to be placed on display.

Landscape architect and plant designer Scott C. Scarfone, ASLA, of Oasis Design Group, was hired to work with the team to develop a master plan for the plants and

displays within each of the galleries. The collections would need strong organizational elements to create the dramatic and aesthetic spatial design the team envisioned. In addition, each display area within the galleries needed to be relevant to the overall exhibit, while providing concentrated displays to serve horticultural, research, and educational roles.

Scarfone worked with the exhibit development team to create a plant placement design that met all of the exhibit criteria. Once the plan was established,

a careful inventory was made of the available plants in the Garden's greenhouses. These plants will become an integral part of the new displays. Then Scarfone and members of the horticulture staff traveled to Arizona and California nurseries in search of additional plants to complete each new gallery. Their mission was to find large, iconic plant specimens that will transform into living works of art, set against the backdrop of both man-made elements and the Sonoran Desert landscape.

The planning process allowed for dialogue and creative thinking among the team members from various disciplines, and generated ideas for new ways to approach challenges. One critical challenge was that of temperature control in the new structures. Curators expressed concern over the feasibility of displaying all the plants we would like, given our extreme desert temperatures—both cold winter nights and excessively hot summer days. How could we install coolers and/or heaters that would not diminish the visual impact of the new galleries? Could we afford to install a heating and cooling system in structures without exterior walls?

Board member Tom Schleifer, Ph.D., who joined the team last fall, brought an



Tom Schleifer (l) and Scott Scarfone (r) review plans for the experimental heating and cooling system.

Photograph by Michael Smith



Quiver Tree, *Aloe dichotoma*.



Neobuxbaumia mezcalaensis.



Mexican cycad, *Dioon edule*.



Elephant Tree, *Bursera microphylla*.



Madagascan Palm, *Pachypodium lamerei*.

The new exhibit spaces will offer the plants room to flourish and grow, which is crucial for such specimens as the towering 20-foot *Neobuxbaumia mezealaensis* cactus or the 12-foot *Aloe dichotoma*.

innovative idea to the table. He suggested that we present our challenge to a team of engineers at Arizona State University, which then developed an experimental heating and cooling system for the galleries. The system they created is underground and is expected to meet both the heating and cooling requirements for the plants, while maintaining the overall aesthetic of the galleries. The experimental heating/cooling system—believed to be the only such system being operated by any botanical garden in the world—will allow us to showcase plants that have

never before been on display at the Desert Botanical Garden.

The exhibit development team set a goal of creating rich and diverse displays that promote discovery and visual excitement. Most major growth forms are represented both inside and outside the new structures throughout the extended gallery sequence. Key amenities for audience comfort were considered and incorporated into the project with shade, seating, and accessibility for visitors of all ages and special needs.



Garden staff unloading a Madagascan Palm, *Pachypodium lamerei*.

Photograph by Renee Immet



Photograph by Renee Immel

Succulent Gallery in the final phase of construction.

Interpretive exhibits will be presented in different modalities—graphical, aural, textual, and multilingual—that have been developed to enhance interpretive learning, as well as allow the Garden to tell a more complete story about the plants. Specimen plants, which can be defined as the most striking of their species, will serve as focal points throughout each gallery. Interpretation will further support the great diversity of form, texture, and color found in the families of cactus and succulent plants, and will help visitors learn the concepts of plant evolution and survival strategies.

Key interpretive themes for the new galleries will focus on the evolution and adaptation of cacti and other succulent plants. In the Cactus Gallery, visitors will learn that cacti have evolved over millions of years, and that these plants have developed structures and behaviors that allow them to survive in deserts. The Garden's world-class cactus collection

is an important contributor to the study and protection of cacti. The Succulent Gallery is designed to exhibit and highlight families containing other groups of succulent plants, exclusive of the cactus family, from around the world.

The reconstruction of the Cactus and Succulent Galleries is made possible by a generous gift from the Sybil B. Harrington Trust, and a challenge grant from The Kresge Foundation. The \$1.5 million grant from The Sybil B. Harrington Trust includes an endowment to support perpetual renewal of the exhibit in the future.

Additional funding from a challenge grant made by The Kresge Foundation provides enhancements to the exhibits, including the heating and cooling system, and a central plaza for visitors between the two galleries. This space serves as the entry foyer into the exhibits. Visitors to the new galleries will enter from the Garden's main loop trail into the central plaza. The Martino-

designed plaza offers seating areas that can be used for tour orientation, or a place for visitors to reflect and rest. The plaza design also provides a showcase for several large existing specimens—such as one of the Garden's few crested saguaros.

The exhibit development team has worked for many months collaborating and building partnerships with designers, contractors, and consultants. The success of the Sybil B. Harrington Cactus and Succulent Galleries is a direct result of strong and creative teamwork. Our goal was to develop a fresh, relevant, and educational exhibit that inspires and excites our visitors. The team adhered to best practices pertaining to ecological design and sustainable horticulture. We hope you will agree that the new galleries achieve these goals and that the Garden's vision of being the premiere center in the world for the study, display, and understanding of desert plants and their environments has become even stronger. 🌵

Meeting the Kresge Challenge

Last fall the Garden received exciting news for the *Tending the Garden* Campaign, an \$850,000 challenge grant from The Kresge Foundation. *This is a clear vote of confidence in the Garden's work by a major national foundation.* The Desert Botanical Garden is well on its way to becoming the premier center for studies of desert flora, and the regional authority on sustainable desert living.

The \$850,000 Challenge Grant from The Kresge Foundation is contingent upon our raising the final \$3.7 million needed to complete the Campaign.



Succulent Gallery near completion.

Photograph by Adam Rodriguez

Sybil B. Harrington

Cactus *and* Succulent Galleries Grand Opening

Join us as we celebrate the grand opening of the new Sybil B. Harrington Cactus and Succulent Galleries, made possible by *Tending the Garden* Campaign. With new shade structures, the galleries present the great diversity of form, texture, and color found in the wondrous array of cactus and succulent plants from around the world. These new displays enable the Garden to tell a more complete story about its collection and the evolution of desert plants.

Saturday / April 5 / Members & Public Opening / 9 a.m.

The Galleries will open for Garden members and the community. Everyone is invited! Opening activities are included with membership or Garden admission.

For information about exclusive campaign donor and member previews, please call Danielle Vannatter at 480-481-8160.

REACHING THE GOAL

As of January 23, 2008



The Garden is pleased to report that as of January 2008, 189 donors have made gifts totaling more than \$2,338,938 that count towards the Kresge Challenge. \$1,384,368 remains to be raised in order to meet the challenge and fulfill the grant award.

The intent of the Kresge grant is to encourage new gifts to the Campaign from the Garden's current members and donors. This is a time when every gift counts, and the Garden is reaching out to members and the community to help. Gifts of any size are both needed and appreciated. To make a gift, contact Danielle Vannatter, 480-481-8160. 🌵

Howard Scott Gentry - Desert Botanical Garden's First Research Botanist and His Legacy of New Crops Research

by Andrew Salywon, Ph.D., Assistant Herbarium Curator

Standing near the northwest end of Webster Auditorium and gazing at the five giant cardónes (*Pachycereus pringlei*) towering overhead, we cannot help but be impressed by the size and beauty of these remarkable cacti. To many people these several-armed sentinels are stately, familiar symbols of cacti diversity in the Sonoran Desert. However, to me they also stand for something more: they are a legacy of Desert Botanical Garden plant researchers and the necessarily long-term vision that some of their research requires.

These cardónes were collected and planted in 1939. At the time they were probably no

more than three to four feet tall. It was with a pressing need for interesting specimens and a bold vision of the future that these, the slowest-growing and tallest species of cacti, were planted. Today, after sixty-eight years, these same plants impressively stand about twenty-five feet tall and may eventually grow to be over fifty feet tall. It is not hard to imagine how much more spectacular the cardónes will appear when they reach their full potential.

Somewhat like the history of these cardónes, the research of the Garden's first full-time botanist, Dr. Howard Scott



Dr. Howard Scott Gentry collecting plants in Mexico, ca. 1960.

Photograph provided by DBG Archives

Gentry, was done with a long-term vision of the future in mind. Dr. Gentry joined the Garden staff in 1971 after a long and distinguished career—first as an independent botanist, and then as an agricultural explorer for the United States Department of Agriculture (USDA). His research had taken him to twenty-four countries in Africa, Asia, Europe, Latin America, and the Middle East, where he explored and collected roughly “15,000 plant accessions, including food crops, forages, medicinal plants, oilseed sources, and ornamental plants” (Cunningham 1994).

It was Dr. Gentry’s deep interest in agaves that first impelled him to join the Garden’s staff as a research botanist. The grounds, facilities, and herbarium offered him the perfect set of resources for pursuing his agave research; he eventually became the world’s expert on this family of plants. Dr. Gentry’s 670 page *magnum opus*, *Agaves of Continental North America*, was published in 1982, culminating fifty years of research in Latin America and the southwestern



Photograph by Andrew Salywon

Field of guayule growing in Maricopa, Arizona, December 2007.

United States on this taxonomically complex, and economically and ethnobotanically important genus. Dr. Gentry’s numerous scientific contributions, along with his promotion of research on the agave family, are monumental achievements.

three plants (guayule, jojoba, and lesquerella) that Dr. Gentry was instrumental in bringing to the forefront of arid-land agriculture. These three plants can be seen growing in the Future Resources Garden on the *Plants and People of the Sonoran Desert Trail* at Desert Botanical Garden.



Photograph by Andrew Salywon

Guayule, *Parthenium argentatum*.

Nevertheless, I believe that it is his lifelong, although somewhat less visible, work of developing new crops for the southwestern United States and northern Mexico, and his interest in diversifying agriculture that may prove to be his most enduring legacy (see Gentry 1981a and 1981b for a popular account of his interests). However, Dr. Gentry’s new crop research, although now several decades old, may take centuries to reach its full potential because of the long-term nature of crop introduction.

Let me briefly discuss exactly what is meant by the two closely related terms “new crops” and “diversifying agriculture.” Additionally, I will give a short discussion of

“New crops” can be loosely defined as crops that are recent or forthcoming additions to existing crops. The term “crop” is also necessarily broadly defined, because plants that we use vary on the continuum from fully wild plants, to cultivated wild plants, to fully domesticated plants that are completely reliant on man for survival. Therefore, “crop” is best described as any plant that is grown specifically for harvesting. It is important to note here that throughout history the “movement of useful plants from the wild condition to the cultivated and back again is a relatively simple and common occurrence” (Harlan 1992). This does not mean that, for most plants, going from the wild state to an easily cultivated or domesticated state can happen overnight. The need for, or interest in, many crops waxes and wanes over time.

As a result, with increased interest in any particular crop more effort is put into developing cultivars. A cultivar is a variety of plant that has been created or selected inten-

tionally and maintained through cultivation. Conversely, as interest in the crop declines, cultivars are often not planted, and seed or plants are discarded or lost. This flow and ebb of interest often happens for new crops when people get excited by their potential, but then become frustrated at the amount of time (often decades) needed to develop the crop profitably.

“Diversifying agriculture”, on the other hand, means increasing the number of crops that are grown. This term is often closely associated with the need to develop new crops.

Dr. Gentry’s interest in diversifying agriculture stemmed from his belief that farming had become too dependent upon relatively few crops. Arid-land farmers needed alternative crops that would be more cost-effective and use less water than the typical commercial crops grown in the southwestern United States and northern Mexico (e.g., alfalfa, cotton, and winter wheat). He was therefore interested in investigating various plants from other arid regions, which could be added to the Southwest as new crops. Diversifying the number of crops planted would also help to reduce problems with insect pests and plant diseases, improve soil fertility, and spread farmers’ risks (i.e., by growing multiple crops the farmer would be less dependent on a single market, which may have dramatic price swings). Some new crops might also substitute for imported products. Additionally, new crop products might help to strengthen rural communities by creating new agricultural industries. Consumers would also benefit with more market choices, better quality, and healthier alternatives. Dr. Gentry’s research was very much in line with Thomas Jefferson’s quote: “The greatest service which can be rendered any country is to add a useful plant to its [agri]culture.”

As previously mentioned, many new crops suffer from waxing and waning of interest. It is hard to imagine a new crop that better fits this description than guayule (*Parthenium argentatum*). Guayule (pronounced why-you-

lay) is a perennial shrub in the sunflower family (Asteraceae) that is native to the Chihuahuan Desert of north central Mexico and southwestern Texas. It contains natural rubber in its roots and stems. While approximately 2,000 species of plants are known to produce rubber, only guayule and the rubber tree (*Hevea brasiliensis* in the Euphorbiaceae family, native to Brazil but now mostly grown in Southeast Asia) have been grown as commercial sources of rubber.

Guayule has a long and interesting history. It was used in pre-Columbian times by the Aztecs to make rubber balls for their ball-court games. Near the turn of the twentieth century, demand for rubber, fueled by the industrial revolution in the United States, nearly decimated wild stands of guayule as

companies such as the Continental-Mexican Rubber Company harvested the plant to export the rubber. At that time, guayule provided approximately 25% of the rubber used in the United States. Following the depletion of wild guayule, the plant was cultivated in Arizona and California on a small scale.

Rubber is a strategic material, so when our supply of rubber from rubber trees was interrupted because of the Japanese presence in Southeast Asia during World War II, the U.S. initiated the Emergency Rubber Project to provide a reliable domestic source of guayule rubber. As a botanist employed by the USDA, Dr. Gentry was a part of the project to identify and collect improved strains of guayule. Near the end



Jojoba, *Simmondsia chinensis*.

Photograph by Andrew Salywon

of the war more than 32,000 acres of guayule were growing in Arizona, California, and Texas.

After the war, when the supply of *Hevea* rubber was once again restored and synthetic rubber from petroleum stock was developed, interest in guayule evaporated and the guayule fields and seed were destroyed. A few years later, the guayule research program in the U.S. ended. Later, when the oil embargo of 1973 drastically decreased petroleum supplies and natural rubber prices were high, the U.S. once again deemed it important to recommence domestic guayule research and production. The expertise of Dr. Gentry was once more requested; this time he worked as an advisor to the National Academy of Science Panel on Guayule (National Research Council 1977). The Panel's work spurred a joint research and cultivating effort by Firestone Tire, the Department of Defense, and the Gila River Indian Community. A guayule processing plant was built near Sacaton, Arizona, in the 1980s and fields of guayule were planted on the Reservation. However, once again this domestic rubber project was abandoned after a few years, because of disagreements among the parties involved, and their mistake in planting low-rubber yielding plants.

To borrow a phrase from Gentry (1981a), "the old rubber ball got bouncing again" in the 1990s, with the pressing need for hypoallergenic latex medical products, which provide a safe alternative for individuals who are allergic to products made from the rubber tree. The rubber/latex from guayule is non-allergenic to individuals sensitized to proteins in *Hevea* latex. Therefore, medical products like examination gloves and catheters produced from guayule rubber are an indispensable *Hevea* substitute in this niche market. The knowledge supplied by past and present research scientists like Dr. Gentry was once again used to bring this new crop back into production. More than 4,000 acres of guayule are now being grown in Arizona and

California. The Yulex Corporation (www.yulex.com) built a new processing plant in 2005 in Maricopa, Arizona, to extract the rubber and latex from this acreage for the manufacture of medical products. The future once again looks bright for this new crop.

Another new crop that Gentry was influential in bringing into production was jojoba (*Simmondsia chinensis*). It was the first commercial industrial (i.e., not for consumption) oilseed crop native to the Sonoran Desert. Jojoba (pronounced ho-HO-ba) is a woody evergreen shrub native to Arizona, California, and Baja California and Sonora, Mexico. It is the sole member of the plant family Simmondsiaceae. The non-toxic jojoba seed oil accounts for approximately 50% of the seed weight and is unlike that of any other plant: it is more precisely described as a liquid wax, similar to sperm whale oil. Jojoba oil has several attributes that make it superior to sperm whale oil for many applications: it is resistant to rancidity (spoilage), the oil molecules are slightly longer, the oil requires little refining, and it does not smell fishy. These superior characteristics are important, because jojoba oil is primarily used by the cosmetics and personal care industry. The unique properties of jojoba oil make it an excellent hair and skin lubricant, as it does not feel greasy or oily like lanolin or mineral oils. For centuries, Native Americans from the Sonoran Desert have used jojoba seeds for food, shampoos, and salves.

During World War II, wild jojoba seed was harvested, with the oil employed as a lubricant in gear, motor, and transmission oils. Spurred by industry interest in using jojoba, Dr. Gentry conducted research and then reported his findings in a seminal paper on jojoba natural history and cultivation (Gentry 1958). His publication brought information about this plant to a wide audience, and played a large role in promoting interest in the budding jojoba



Fruiting branch of jojoba.

Photograph by Andrew Salywon

industry during the 1970s. However, when he addressed the Third International Conference on Jojoba in 1978, Dr. Gentry warned that it was going to be a "long and dusty" road before jojoba became a commercially profitable domesticated crop. His warning was indeed prophetic. In 1983, buoyed by generous U.S. Government tax subsidies, close to 40,000 acres of jojoba were planted in Arizona and California (often by entrepreneurs with little knowledge of either farming or jojoba). When the tax subsidies ended in the 1990s, and large fluctuations in price driven by commodity speculation occurred, the fields were abandoned as no longer profitable. Today there is no commercial jojoba acreage in Arizona, although the shrub is still grown in California and is now also cultivated in Israel, Africa, and Australia.

Advances in jojoba agronomy are continuing, albeit at a slow pace. Once some of the agronomic hurdles are passed, such as improving seed yield and harvesting techniques, there is a large market waiting for affordable jojoba oil; we may yet again see large fields of this native plant.



Lesquerella fendleri in flower and fruit.

The third new crop that I will briefly discuss is lesquerella (*Lesquerella fendleri*, in Brassicaceae, the mustard family), which is native to the southwestern United States and northern Mexico. The seed oil of lesquerella was found by a team of USDA scientists, including Dr. Gentry who collected the seed, to be rich in hydroxy fatty acids (HFAs). HFAs are used in various industrial lubricants (such as greases, hydraulic fluids, and motor oils), plastics, drying agents, protective coatings, surfactants, cosmetics, and pharmaceuticals.

The United States relies on imported castor oil for its supply of HFAs. Therefore, having a safe, domestic alternative is of great interest to our country.

Because the seed oil of *Lesquerella fendleri* is very similar to castor, and because it possesses many favorable traits for domestication, Gentry called this plant "one of the most promising for new crop development" (Gentry & Barclay 1962). Dr. Gentry collected *L. fendleri* seed from many populations. Using Dr. Gentry's seed, a breeding program was initiated by the USDA in Phoenix in the 1980s. This lesquerella breeding program continues today at the USDA Arid-Lands Agricultural

Research Center in Maricopa, Arizona. Much progress has been made in domesticating lesquerella, with the hope that commercial acreage will be planted in the near future. The rise in oil prices, combined with growing interest in biodegradable and non-toxic petroleum substitutes, is creating a large demand for crops like lesquerella that produce vegetable oils for industrial purposes. Perhaps in the near future, we might see lesquerella oil used as an additive to diesel fuel to decrease engine wear and sulfur emissions, or as motor oil, or even as a less-oily feeling sunscreen.

Interest in developing new crops will always fluctuate. Industry is slow to invest in new crop raw materials and technology until a predictable supply of the desired output product is established. Commodity prices are never stable and the need for end products is never assured. Nevertheless, we will always be reliant on natural products, and with increasing concern about the quality of our environment there is renewed demand for diversifying agriculture. The diversity of plants that surrounds us might just be able to supply that need. That is what drives botanists like Dr. Gentry to explore the world—the promise of finding our future crops. 🌱

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Seeds of *Lesquerella fendleri*.

Sonoran Circle Planting Seeds for the Garden's future

by Susan Shattuck, Gift Planning Officer

Gifts to the Desert Botanical Garden from bequests and estate plans have helped grow the Garden throughout its sixty-nine year history. In its early years, bequests afforded the Garden financial stability. They allowed for planning, plant collection, exhibit development, infrastructure creation, and greater community support.



Photograph provided by DBG archives

Gertrude Divine Webster.

Founder Gertrude Divine Webster made the Desert Botanical Garden's first planned gift. On her death in 1947, she made an outright gift of her entire collection of cacti, books, horticulture studies, garden ornaments, and statuettes. The remainder of her Arizona properties and securities were conveyed to a trust for the perpetual benefit of the Garden. The Webster Trust continues to provide a permanent income stream.

LouElla Archer followed Mrs. Webster's lead. She created a trust to benefit friends, her gardener, and ultimately the Desert Botanical Garden. The gift provided for endowment growth, building refurbish-

ment, equipment replacement, and a vehicle to aid Garden scientists and botanists in their field work.

The Garden's first advisory Planned Giving Committee was formed in the early 1990s to promote future estate gifts. The Committee formed the Sonoran Circle, a recognition society, to formally acknowledge and celebrate deferred gift donors.

Former Executive Director Carolyn O'Malley credits Development Director Sherry New with efforts to raise awareness about legacy giving. *"Sherry New was very much in tune with the swing toward legacy gifts. It's through her wisdom and planning that we implemented the 60 x 60 Campaign."* The goal was to raise 60 planned gifts by the Garden's sixtieth anniversary, in 1999. Cultivation success grew the Sonoran Circle ten-fold in seven years.

Numerous donors chose to invest in the Garden's future through gift plans. Long-time Garden supporter and Trustee, Dr. William Huizingh created permanent financial resources by building an Endowment and an Operating Reserve.

Now 127 donor households are part of the Sonoran Circle. Realized estate gifts, *Tending the Garden*, deferred gift intentions, and thoughtful donor notifications continue to grow the Circle and plant seeds for the future.

The Garden shares information about planned gifts at www.dbg.org. Gift comparisons and in-depth details can be shared with professional advisors when making estate plans.



Photograph by Adam Rodriguez

Carol Schilling.

Carol Schilling, former Garden Trustee and Volunteer, succinctly expressed the motives for her future planned gift. *"There is no way that I could give back the peace, tranquility, and healing that the Garden has provided me. I'm confident that when my gift is realized, the Directors will know just how to use my gift to the Garden's benefit. The Desert Botanical Garden is so precious to me. I want it to be successful forever!"*

Each thoughtful planned gift helps to preserve the Desert Botanical Garden for future generations. Please let us know if you have planted seeds for the Garden's financial future.

For more information, contact Susan Shattuck, gift planning officer, 480-941-3507 or sshattuck@dbg.org

Sonoran Circle Milestones

1947

Webster Trust Realized
First Planned Gift

1991-92

First Sonoran Circle Celebration
17 Donors Recognized

1997-99

60 x 60 Campaign
Secured 60 Planned Gifts by 60th
Anniversary

1999-2001

Growing a Legacy Campaign
84 Sonoran Circle Donors

2005

Archer Gift Realized
93 Sonoran Circle Donors

2008

Tending the Garden Campaign
14 NEW PLANNED GIFTS
127 Sonoran Circle Donors



At Home in Your Desert Garden: Butterfly Gardening

by Angelica Elliott, Curator of Wildflowers

Many visitors have experienced the magic of the Garden's Butterfly Pavilion. Gardening to attract butterflies to your own landscape can also be a magical and rewarding experience. With over 250 butterfly species found in the Sonoran Desert, you will be able to attract many different varieties to your garden by following these butterfly gardening basics.

Plant both larval (caterpillars) and adult food plants. Caterpillars feed on plant material and some larvae can be quite particular about the type of food they eat. For example, the Pipevine Swallowtail larvae feed exclusively on *Aristolochia watsonii*, Watson's Dutchman's Pipe, in the Sonoran Desert region. Without the occurrence of *Aristolochia watsonii*, the Pipevine Swallowtail would not be found here. As adults, many butterflies tend not to be so picky about the type of flowers they select for nectar, but they do like flowers on which they can land or perch, or they may prefer a particular

color of flower. Other butterflies rarely visit flowers for nectar, but prefer mud, sap, dew, rotting fruit, or animal droppings. Adding both larval and adult food plants will encourage many butterflies to your garden, but it is also important to note that having these host plants available does not guarantee the presence of the butterfly you are trying to attract. Butterflies may also need certain vegetation types for protection, spots for hibernation, and territorial perches. Intact habitat is necessary to support large populations of butterflies. However, there are many desert butterfly denizens that are quite adaptable to urban settings.

Avoid using insecticides. They are poisonous to both the caterpillars and adult butterflies. Usually caterpillars will not destroy the host plant on which they are feeding, especially if the plant is well established. However, it is possible that caterpillars can harm newly-planted plants if infestation is high. Instead of using chemicals, allow the natural world to do the work for you—birds will often eat these succulent caterpillars.

Provide moisture. In our arid climate, providing moist areas can be helpful to many butterflies. Small wet areas will provide some adult butterflies with needed minerals and salts. Place a drip emitter in a small depression in the ground to make a puddling spot for butterflies to gather.

Locate your butterfly garden in a sunny site, but provide shade. Butterflies are cold-blooded and will need to begin the day by sunbathing to warm their bodies before becoming active. Ideal areas for planting

your butterfly garden can be in a south- or west-facing location.

However, in the low desert region it is just as important to provide a shady area for butterflies to seek retreat in the hottest days of summer and early fall. Use the beautiful selection of native mesquites such as the screwbean, velvet, and honey mesquites for shade, as these are also larval food plants for many caterpillars.

Monarch caterpillars on Bloodflower, *Asclepias curassavica*.



Beebrush, *Aloysia gratissima*.

Photograph by Kirti Mathura



Photograph by Adam Rodriguez



Photograph by Kiri Mathura

Yellow flowers of Desert Senna, *Senna covesii*.



Photograph by Kiri Mathura

Desert Broom, *Baccharis sarothroides*.



Photograph by Kiri Mathura

Kidneywood, *Eysenhardtia orthocarpa*.

Provide hiding places. Butterflies may undergo a period of dormancy during unsuitable climatic conditions, such as drought. Allow for a small, unmanicured area in which these caterpillars and butterflies can take cover.

Create mass plantings. In landscaping, use groups of the same plant species. Butterflies seem to be attracted to mass plantings rather than individual plants. Take into consideration the mature size of the plant and proper cultural requirements to ensure success of your butterfly garden. There are many plants to choose from when creating a butterfly garden. Below is a list of different plants that have been effective in attracting many butterflies to the Garden's urban setting.

Aloysia gratissima, or beebrush, is a shrub that produces showers of white, vanilla-scented flowers throughout the year. The flowers attract a wide variety of butterflies including the Queen, Great Purple Hairstreak, Blues, Checkerspots, and the Snout butterfly. Beebrush does best in full sun, but will tolerate light shade. At maturity, beebrush can reach up to ten feet in height, making an excellent background plant or airy screen.

Baccharis sarothroides, or desert broom, a native, is considered by many gardeners to be the bane of the desert because of its invasive nature. However, for those serious in butterfly gardening this is an excellent nectar plant for butterflies and many other insects. At maturity,

desert broom grows up to eight feet tall; it blooms in late fall, extending the season for butterflies. Desert broom is dioecious, meaning that each individual plant bears only female or male flowers, so try using male plants if you want to prevent unwanted volunteers.

Senna spp. Plant any native desert sennas as a larval food plant for many Sulphur butterflies. Desert sennas come in a variety of sizes, ranging from one to up to six feet high. Use *Senna covesii* for a low-maintenance and low-growing perennial, and it will reward you with fragrant yellow flowers throughout summer and fall. Some of the shrub sennas to include are *Senna lindheimeri*, *Senna hirsuta*, and *Senna wislizenii*.

Asclepias subulata, or desert milkweed, is a larval and nectar food plant for the Queen butterfly. Desert milkweed is an extremely drought tolerant plant with cream-colored flowers borne throughout spring and fall. It also adds a strong sculptural accent to the landscape.

Eysenhardtia orthocarpa, or kidneywood, is an underused shrub or small tree that is truly a worthy

addition to the landscape. The flowers of kidneywood are white and fragrant, attracting Hairstreaks and Blues, but it is also a larval food plant for the Marine Blue butterfly.

Passiflora foetida, or passion flower, is a unique vine that attracts the Gulf Fritillary butterfly to lay her eggs on the leaves. The flowers are exotic and the fruits are sweet, fragrant, and edible.

Whether your landscape is large or small, include some of these plants to try to attract these colorful creatures. Most of these plants will be offered at our Spring Plant Sale. And, if you want to see butterflies up close and personal, come visit our Spring Butterfly Exhibit.

Spring Butterfly Exhibit in the Maxine and Jonathan Marshall Butterfly Pavilion

presented by Wells Fargo

March 1-May 11 / 9:30 a.m.-5 p.m. daily
Free for Members, \$3 for Non-Members,
3 years and older with paid Garden
Admission.



Spring Plant Sale

Garden Members' Preview:
Friday / March 14 / 7 a.m.-5 p.m.

Open to the Public:
Saturday / March 15 / 7 a.m.-5 p.m.
AND Sunday / March 16 / 9 a.m.-5 p.m.
Sponsored in part by Tierra Madre Landscape
Services and Water Use it Wisely.

Someone to Know: Michael Smith

Please join Garden staff in welcoming Michael Smith in the newly created position of Deputy Director. In addition to supervising the Visitor Services, Facilities, Retail, Marketing, and Security departments, he will also stand in for Executive Director Ken Schutz when needed.

Michael comes to us from the eastern United States, where he has already had a full career as director of such departments as Visitor Services, Public Relations, Security, and Marketing at museums including Biltmore Estate in Asheville, North Carolina, the Virginia Museum of Fine Arts in Richmond, Virginia, and the Walters Art Museum in Baltimore, Maryland.

His experience at various art institutions has prepared Michael well for his position



Deputy Director Michael Smith.

here. He is quite familiar with the many aspects of ensuring a compelling and rewarding experience for visitors of all backgrounds, which makes him truly a visitor advocate. 🌿

VIGs to Sponsor Golf Tournament

Now is the time to save the date and mark it on your 2008 calendar.

The Desert Botanical Garden's Volunteers in the Garden organization invites you to participate in the first annual charity golf tournament: *Golfin' in the Desert*. The event will be held at one of the Valley's premier golf courses, ASU's Karsten Golf Course, 1125 E. Rio Salado Parkway, Tempe, AZ 85281. This golfer's dream will occur on September 20, 2008, with a shotgun start at 7:30 a.m. Space is limited to 120 players. The best part is that the cost is only \$100, and includes golf cart, range balls, greens' fees, two raffle tickets, a gourmet lunch, and a goody bag full of cool stuff. After May 30, 2008, the price will increase to \$125. Registration applications can be



found in the January issue of *Gatherings*, and on line at www.dbg.org. The proceeds from the tournament will go to help Title 1 students in the Valley through the Desert Botanical Garden's *Tending the Garden* Campaign. For information on registration, sponsorships, or donations call Amy Walker at 480-220-0305 or e-mail her at ajamy@fastq.com. Registration applications should be mailed to Shirley Bekey, VIG Treasurer, Desert Botanical Garden, 1201 N. Galvin Parkway, Phoenix, AZ 85008. Tell all your friends and neighbors, and let's make this the best golf tournament ever! 🌿

Land Swap

After three years of discussion and legal wrangling, the Desert Botanical Garden has officially traded approximately 16 acres of property west of Galvin Parkway for a similar sized piece of desert south of the Garden's main entrance.

Spearheaded by former Board President William Wilder, the swap will give the

Garden a unique parcel of land to preserve, in exchange for virtually unusable property across the road. "On behalf of the Board and staff at the Desert Botanical Garden, I would like to thank Mr. Wilder for his hard work in seeing this through," said Garden Director Ken Schutz.

Plans for the new property, when funds become available, include moving the fence line and possible re-vegetation once the land has been incorporated. 🌿

Desert Landscaper Certification Program

Classes start September 9, 2008.

For more information, check www.dbg.org and register online, call Rebecca Senior at 480-481-8161 or for classes in Spanish, call Jaime Toledano at 480-481-8169.

Garden Welcomes New Trustees

The Desert Botanical Garden welcomes these Trustees who joined the Board in 2007:

Kathryn Baker, CPA, is Vice President and Treasurer for Blue Cross Blue Shield of Arizona, with responsibility for strategic tax planning and compliance, risk management, and the administration of executive employee benefits. She is active in the community and has served in board and committee roles for Teach for America, Arizona Foundation for Women, and the Wellness Community. Ms. Baker chairs the Garden's Investment Committee and is a member of the Finance Committee.

Tom Bekey has been a volunteer at the Garden since 2001 and served as President of Volunteers in the Garden for two years. Prior to his retirement, Mr. Bekey served as vice president and principal geologist of the geotechnical engineering and environmental consulting firm of Rittenhouse-Zernan and Associates, in Seattle, Washington. He chairs the Garden's Education Advisory School Committee and serves on the Garden's Master Plan,

Capitol Improvements and Planned Giving Committees.

Barton Faber founded FABERcapital, a private equity investment firm, in 1998. Mr. Faber is also a partner in Atrium Capital in Palo Alto, California, which focuses on the Information Management and Technology industries. He is the former CEO of Metromail Corporation. He serves on the Garden's Finance, Research, Collections and Horticulture, Capital Improvements, and Investment Committees.

Amy Flood is a senior vice president in the Real Estate Department at JP Morgan Chase, where she serves as a banker to large real estate developers handling loan, deposit, and all other banking matters for her clients. She is serving as Chair of the Garden's Patron's Circle Committee and is Co-Chair of Dinner on the Desert.

Bruce Weber is a former executive with Microsoft. He began volunteering with the Garden in 2004 and has served as a Tuesday docent hosting Garden and

Ambassador tours. In 2007 he led the Garden's website redesign project. Bruce serves on the Garden's Executive, Master Plan, and Marketing Committees.

Donald R. Ottosen is a second generation Arizonan and president of Ottosen Propeller & Accessories. As a young child, he visited the Garden on a field trip with his second grade class, and now enjoys wandering the trails with his grandchildren. Don is serving on the Garden's Master Plan, and Building & Grounds Committees. He also participates on the planning and development team for the new Ottosen Entry Gallery.

Thomas C. Schleifer, Ph.D., is currently Visiting Eminent Scholar for Arizona State University's Del E. Webb School of Construction and Ira A. Fulton School of Engineering. He has an extensive background in the construction business and is chairing the Garden's Building & Grounds Committee as well as serving on the development team for the Cactus and Succulent Galleries. 🌵

DINNER ON THE DESERT 2008

Scott Schaefer and Amy Flood, 2008 Dinner on the Desert Co-Chairs, invite members and guests to attend the 22nd annual event on Saturday, April 26, 2008.

This sell-out event begins with cocktails, music, and a fabulous silent auction in Dorrance Hall and on Kitchell Patio. Music and dinner under the stars will follow on Ullman Terrace, with a fast-paced live auction featuring one-of-a-kind items such as an original acrylic painting by artist Ed Mell, and a Tiffany & Co.

after-hours dinner party for twelve guests. Guests then conclude the evening by strolling to the grand after-dinner party on Boppart Courtyard with more dancing, bountiful desserts, and cordials. We are pleased this year to welcome our caterer, The RK Group, and our after-dinner party entertainment, The Groove Merchants.



Proceeds from this fundraiser support the Garden's mission. For further information please contact Marcia Flynn at 480-481-8154. 🌵

dinner on the desert

2 0 0 8

Spring Break Eco Camp

Join us as we discover who's emerging, nesting, and migrating during our exciting Spring Break Eco Camp.

For children in grades K-2 and 3-5

Session I / March 11-13

Session II / March 18-20

Session III / March 25-27

All sessions are Tuesday-Thursday
9 a.m.-3 p.m.

Member: \$120/Non-Member: \$150
(20% discount for additional siblings)

For more information visit www.dbg.org, call 480-481-8146 or email amad@dbg.org.

In Appreciation

September 16-December 15, 2007

The Desert Botanical Garden is grateful for the support of all 17,567 members. Recognized here are members of the Founder's Circle, President's Circle, Director's Circle, Curator's Circle, Saguario Circle, and The Sonoran Circle. Also listed are donations and memberships received from September 16-December 15, 2007, for Golden Barrel Club, Ocotillo Club, Boojum Tree Club, Agave Century Club and Desert Council.

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Kay A. Young
Mary & Harry Young

THE SONORAN CIRCLE

The Desert Botanical Garden is honored to acknowledge the following individuals who have included the Garden in their estate plans:

Anonymous (26)
Gail & John Allan
Sidney Allen
Mary Jo & Gene Almendinger
Lou Ella Archer*
Billie Jane Baguley
Judy & Web Baker

Have you provided for the Desert Botanical Garden in your will or estate plans? If so, you may qualify for membership in The Sonoran Circle. For more information call Susan Shattuck, gift planning officer, at 480-941-3507.

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Valerie Banks
Diane Barker
Lewis Barnard, Jr.*
David Barnett
Judy Larrie Bates
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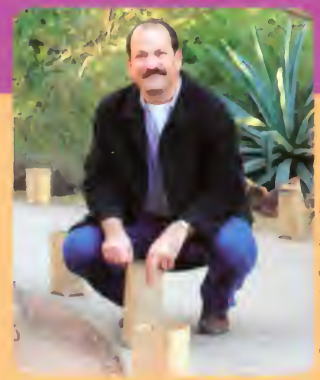
THE SONORAN QUARTERLY

For members and friends of the Desert Botanical Garden, Phoenix, Arizona June 2008/Volume 62, No. 2

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Photograph by Gene Anderson

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On Volunteerism

On the occasion of the 25th anniversary of the Desert Botanical Garden's Volunteer Program, we have chosen to salute all of our incredible volunteers in this issue of *The Sonoran Quarterly*. The author of our cover story, Carol Schilling, is herself a long-time volunteer in the Garden. When you read her byline, you will be able to appreciate all that she has given to the Garden in the last 22 years. If you take Carol's individual effort and multiply her energy and enthusiasm by 1,000, then you will begin to understand just how important all our volunteers are to the daily operation and long-term success of the Garden.

Volunteerism seems to me a uniquely American phenomenon. When I meet colleagues from other countries and boast about our volunteer program, they just don't understand. They ask me, "Why would people choose to work so hard without being paid?" I try to explain that as a society we function best when we all pitch in and help each other, and that hard work can have many rewards other than financial—especially when the spirit of volunteerism is shared broadly throughout the community. I always invite my colleagues to come to the Desert Botanical Garden to see volunteerism in action. I promise them that they will leave inspired by the generosity and talents of all the volunteers they meet, and with a better understanding of the American spirit that makes volunteerism so integral to the successful functioning of our society.

I did a little research to find some quotes that embody the spirit of volunteerism; here are the ones I thought most appropriate to recognize all the Volunteers in our Garden:

Volunteers don't get paid, not because they're worthless, but because they're priceless.
~ Sherry Anderson

The only people with whom you should try to get even are those who have helped you.
~ John E. Southard

Being good is commendable, but only when it is combined with doing good is it useful.
~ Author Unknown

You give but little when you give of your possessions. It is when you give of yourself that you truly give.
~ Kahlil Gibran

Paul Revere earned his living as a silversmith. But what do we remember him for? His volunteer work.
~ Susan J. Ellis

The highest reward for a person's work is not what they get for it, but what they become because of it.
~ John Ruskin 🌿

Ken Schutz,
The Dr. William Huizingh Executive Director



Photograph by Adam Rodriguez

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ON OUR COVER

Enthusiastic volunteers enjoyed the recognition luncheon on April 13, 2008. Thanks a million to our wonderful Garden volunteers.

Cover photograph by Adam Rodriguez
adamsphoto@cox.net

Twenty-five Years of Organized Volunteer Effort

by Carol Schilling

If anyone owns the Desert Botanical Garden, it is surely the volunteers. At least they think so.

Volunteers are the ones who walk the pathways and tell their guests (or themselves), "I planted that cactus." Or, "I pruned that tree." Or, "I stand here when I tell people about the agave forest." Volunteers help sort the seeds, send out the mailings, measure the saguaros, prepare the Garden's special soil mix, water the plant beds, map all the plants in the Living Collection, and inventory the pots at the plant sales. During *Luminaria*, they illuminate the pathways, provide accurate directions, and greet the guests. They answer plant questions, collect data, dig up salvage plants, assist visitors in the Garden Shop, and help raise money. They rake, prune, plant, and transplant. They teach, talk, and tell stories. They pull weeds even when it's 108 degrees.

They do it all for love.

They love the plants, they love the Garden, and they love the friends they have made here. And love gives them ownership.

Many Hands Make Light Work and Big Numbers

There are more than 1,000 volunteers at the Desert Botanical Garden. In the year 2007 they

worked 66,242 hours, the equivalent of 34.5 full-time staff members. According to professional calculations, their work was worth \$1,212,968.49. That is a huge gift to the institution they love. Many volunteers have been giving their time to the Garden for years and years; much longer, in fact, than the generally accepted length of less than one year that a volunteer will stick with the commitment.

Susan Ahearn, for instance, has been a member of the Garden for 38 years and a volunteer since 1989. She works at least two days a week at the Garden and has accumulated more than 12,000

hours of service. A lover of plants, she works as a horticultural aide, as well as in the Garden Shop, the seed room, and on various research projects. A donor to the Garden herself, she also helps on the Garden's current endowment campaign. "I just like the camaraderie with the volunteers and the staff," she said. "I also love meeting people from all over the world. They see the plants and the desert with fresh eyes, and I enjoy seeing it anew with them."

Ann Younger is in her second year as president of the *Volunteers in the Garden* organization. Nine years ago, she saw the



Docent, Carol Hollis shares desert wildflower information with a fascinated Garden guest.

Photograph by Gene Almerange

25-year Volunteers

Mary Jo Almendinger
Tillie Chew
Pat Comus

Ethel Farr
Miriam Francis
Anne Gully

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Garden for the first time at *Las Noches de las Luminarias*. "I just fell in love," she said. She came back the next day and became a member. The Garden has meant much to her, "but one of the things that means the most is my friendships with the staff. Our staff members are so wonderful and so appreciative. Even if I only stop in to visit someone's office, I get thanked."

The Garden is fortunate in having twelve volunteers who have worked twenty-five years at the Garden. One of them, Don Squire, has been a volunteer since 1968. Charlie Brenner has worked 16,236 hours at the Garden, the record number of hours. Susan Ahearn has worked 12,096 hours.

Know Them, Train Them

The volunteer program at the Desert Botanical Garden is one of the most successful volunteer programs in the country. The secret to its success is simple, according to Pat Smith, Volunteer Programs Manager for twenty years. Her formula works: find out what prospective volunteers want to do, train them how to do it, and thank them afterwards. "People who run volunteer programs talk about the three R's—recruiting, retaining, and recognizing," Pat said. "But I add a fourth one—readiness. You first have to know what you want your volunteers to do, as well as how to train them for the task."

Organizations from all over the country call Pat to ask how the Garden's program is structured, how it uses staff members with the volunteers, and how new volunteers are trained. "We treat potential volunteers as if they were applying for a job," Pat says. First they fill out applications. Then either Pat or an assistant (usually a volunteer) interviews each applicant, helping them to understand the Garden and what volunteer jobs are available while learning about their particular interests. Some of the questions asked might be: "Would you like to work with plants or would you rather work with people? Do you like one-time projects or on-going projects?" Additional valuable information is usually gleaned during the interviews, such as the applicant's past professional experience, talents, and hobbies.

Each new volunteer's training begins with a four-hour class called "How to Be a Garden Volunteer." "This is the first course of what we call 'Volunteer U,'" said Pat. "The 'U' really stands for 'you.'" Volunteers in either the horticultural or docent programs (the majority of volunteers choose one of these two paths) then take two foundation science courses, which provide eight hours of botany and eight hours of desert ecology education. These basic science courses are followed by five weekly,

four-hour sessions, which prepare them for their program.

Altogether, most volunteers may receive up to forty hours of training before going to work, depending on the program chosen. One exception is the SAGE (Sonoran Adventure Guides) program, which prepares docents to work with school groups—they receive 49 hours of training.

Once trained, a volunteer goes to work,



Horticulture Aide, Susan Ahearn unloads plants for the new Cactus and Succulent Galleries.

Photograph by Renee Immel



Docent, Jan Trenter entices guests to join her tour with interesting desert items.

Photograph by Renee Almendinger

usually as part of a group that is under the supervision and direction of a member of the Garden's staff. Employees themselves are coached and skilled in working with volunteers, and accept responsibility for the volunteers' success and satisfaction. The close and companionable association between staff and volunteers accounts for part of the huge success of the volunteer program.

A Daily "Thank you" Sincerely Meant

The Garden thanks its volunteers in many, many ways. Staff members say "thank you" to volunteers every day, "and they really mean it," said Pat. Some programs have their own wrap-up party at the end of a season. Volunteers who have worked ten years are recognized as Hardy Perennials in the newsletter for volunteers, *Gatherings*. Plus, at the end of each season, there is the Volunteer Recognition Event, held, this year, as a luncheon on April 13.

Everyone who had worked 100 hours or more during the previous calendar year received the Beavertail Prickly-Pear Award, a surprise pin of a different kind each year. As their accumulated hours of service begin to add up, volunteers receive a silver agave logo pin at 500 hours, with a silver bar pin at 1,000 hours and for each 1,000 hours after that; a gold agave logo pin at 5,000 hours, with a gold bar pin for each following 1,000 hours; and a gold agave logo pin with the Garden's amethyst birthstone at 10,000 hours, with a gold bar with amethyst pin after each additional 1,000 hours.

This year the twelve people who have been volunteers for twenty-five years each received a newly minted award, a pin in the shape of a star.

Volunteer Help Expand Events

Volunteers have profoundly affected the growth of the Garden.

Two major events at the Desert Botanical Garden—as important to the entire community as they are to the Garden itself—grew out of volunteer efforts. They are the twice-a-year plant sales and the winter holiday event known as *Las Noches de las Luminarias*.

The plant sales had an innocuous beginning. In the late 1980s, volunteer Edra Drake believed that visitors to the Desert Botanical Garden would like to buy plants to take home. Edra brought small potted plants

from her own collection for sale at the gift shop, and eventually persuaded Garden staff to allow the volunteers to have a small plant sale for the public.

The "small plant sale" was an instant success and quickly grew to such popular status that plant-lovers lined up well ahead of opening time in order to be the first to rush into the sale and scoop up their coveted favorites. After a few years of volunteer management, the plant sale had become such a phenomenon that it called for full-time, professional management, with the result that the Garden assigned the project to its first director of public horticulture, Mary Irish. The plant sale then took a quantum leap in size, offering thousands of plants to Valley gardeners. It expanded into two sales a year—fall and spring—and has become a major source of sustaining revenue for the Garden.

The other major volunteer effort, *Luminaria*, began thirty years ago as a small private party that Garden staff members created to thank the volunteers. There weren't many staffers in those days, or many volunteers, or even many miles of Garden trails. Those trails were lined with the magic of softly

glowing luminarias, however, (the candles in brown paper bags) and volunteers were served coffee and cookies as an act of appreciation for their work. The volunteers loved the party so much that, a few years later, they took it over and opened it to the public as a holiday event for families; it became a three-day fund-raising event that required hundreds of volunteer hours spread out over the entire year. Immensely popular, *Luminaria* could accommodate only 9,000 visitors and was an annual sell-out. It generated important revenue for the Garden, but required a huge organizational effort by volunteers, especially when it was expanded to more nights.

In 2004, the volunteers, while continuing to provide the crucial staffing for the event, handed the management of *Luminaria* over to Garden staff. It was expanded to nineteen evenings last December and continues to sell out as a must-do holiday experience.

Over the past quarter of a century, what have the volunteers meant to the Garden? Pat says it best: "They have allowed the staff to be creative. We can be creative because we know we have trained and qualified volunteers to help us do the job

every year. They enhance anything and everything we do here. The Garden would not be here without its volunteers."

"We have the best volunteers in the world." 🌵

How to volunteer:

Call Nancy White at 480-481-8197.

(Editor's note: Carol Schilling became a Garden volunteer in 1986. She worked in many capacities, including as a horticultural aide, on the Plant Hotline, in charge of *Luminaria* ticket sales, on numerous research projects, on plant sales, in the library, and on many other projects. She also founded and then edited *The Sonoran Quarterly* for 16 years, and served on the Board of Trustees for six plus years. Carol is a member of the Sonoran Circle and a valued donor to the Garden.)



Horticulture Aide, Tom Gatz places specimen plants in the new Cactus and Succulent Galleries.

SAVING AN ENDANGERED TREE CACTUS ON SUBTROPICAL ISLES

by Joe McAuliffe, Ph.D., Director of Research and
Kathy Rice, M.S., Curator of Rare & Endangered Plants



Potted Keys tree cactus in the Desert Botanical Garden conservation greenhouse.

Photograph by Kathy Rice

If you peek inside the Garden's conservation greenhouse, you will notice upright-sprouting cactus stems standing at attention in four neat rows of pots. The vigorous plants, grown from cuttings, look somewhat like the tips of the stems of the native Sonoran Desert organ pipe cactus, but are only about half the diameter. Despite this superficial similarity, these cacti are from a place far from the deserts of the American Southwest. They are specimens of the Keys tree cactus, *Pilosocereus robinii*, an endangered species from the Florida Keys.

The Florida Keys are a 100 mile-long string of low islands that extends in a southwesterly to westerly arc from the southern tip of Florida. The subtropical humid environment of the Keys certainly differs from our hot dry deserts. Why then, does the Desert Botanical Garden possess a living collection of an endangered species from that part of the country?

The answer is that the Garden is a member of the Center for Plant Conservation (CPC). The CPC is a non-profit network of more than thirty botanical institutions dedicated to the protection and restoration of native flora in the United States. This network manages and cares for a decentralized National Collection of Endangered Plants consisting of more than 600 of the most endangered plant species in the United States. This living collection is collectively housed by the many member institutions throughout the country. The care of these extensive *ex situ* collections is one way to ensure that plant materials can be made available for possible *in situ* conservation efforts aimed at reintroductions to the wild.

In 1990, the CPC was searching for an appropriate botanical institution that could receive and care for back-up collections of three endangered or rare cactus species from south Florida. At the time, those

CPC collections were held only at the Fairchild Tropical Botanic Garden in Coral Gables, Florida, located on the south side of Miami. Back-up collections are important because they ensure the perpetuation of living collections should some unforeseen natural disaster, plant disease, or pest problem threaten plants at any single location. The three species were the semaphore pricklypear, *Consolea corallicola*, the fragrant apple cactus, *Harrisia fragrans*, and the Keys tree cactus, *Pilosocereus robinii*.

Although the Desert Botanical Garden is located in an environment that is very different from the one in which these cactus species naturally occur, our institution is recognized for its premier living collection of cacti from many kinds of environments, and was thought to be an excellent choice for the location of a back-up collection. In August 1990, botanists from Fairchild sent



Photograph by Joe McAuliffe

Joie Goodman, biologist with Fairchild Tropical Botanic Garden and a group of healthy Keys tree cacti.

door collections of palms, cycads, and tropical trees lay flattened and splintered. Subsequently, botanists and horticulturalists from many institutions across the country pitched in at the site to salvage what they could, in hopes of propagating new plants from surviving stems, rootstocks, and cuttings.

In the process of rebuilding the living collections at Fairchild, staff members of the Desert Botanical Garden were contacted about the back-up materials of the cacti. Of particular interest was material for the Keys tree cactus, because the few natural populations of this species in the Keys declined rapidly during the late 1990s. From the original two individual plants received in 1990, the Garden had amassed a collection of living seed larger than that held by Fairchild.

rooted plants of the three species to the Desert Botanical Garden. The shipment included two specimens of the Keys tree cactus; one grown from seed, the other field-collected as a small growing plant. Garden staff successfully grew those plants to maturity and flowering. Through controlled cross-pollination, those cacti produced viable seed. Different seed storage methods were tested in order to find the best means to preserve seed vitality.

The creation of back-up collections of these endangered species was a prescient management decision, because disaster did strike. In August 1992, two years after the cactus specimens were received by the Desert Botanical Garden, Hurricane Andrew ripped a wide path of destruction across south Florida; the Fairchild Tropical Botanic Garden was not spared. This category 5 hurricane (one of only three category 5 storms to impact the United States in the 20th century) claimed 65 lives and was the costliest natural disaster in the country until surpassed by the destruction associated with Hurricane Katrina in 2005. On the grounds of the Fairchild Tropical Botanic Garden, the aftermath was grim. Fairchild's diverse and spectacular out-

In 2005, Dr. Joyce Maschinski, Fairchild's Conservation Ecologist, contacted us to propose our direct cooperation on a project dedicated to the assessment of wild populations of the Keys tree cactus, identification of potential reintroduction sites, and investigation of propagation methods that could be used in a reintroduction effort. This project was funded by the U.S. Fish and Wildlife Service. One of us (K. Rice) worked with Fairchild staff to obtain new material for propagation from field sites, and the other (J. McAuliffe) provided expertise in research methods for studying ecological conditions in the field. Both of us worked with Fairchild research staff at the sites in the Florida Keys in January and February 2007.

A long history of decline

One of the main goals of the project was to identify the cause(s) of the marked die-off of the Keys tree cactus within the few natural populations that remained. In many ways, the recent losses represented a rapid acceleration of a long period of steady unabated decline. The cactus is found in hardwood hammocks, which are low forests of broad-leaf hardwood trees that typically reach

heights of 20-25 feet (6-7.5 m). In addition to the Keys tree cactus, other cactus species are found in these environments, including the aptly named barbed wire cactus, *Acanthocereus tertragonum*, whose tangled, spine-covered stems make parts of hammocks difficult (and painful!) to traverse.

In the early 1900s, the Florida Keys were remote, accessible only by boat. That changed with the completion of a railway in 1912 linking Key West with the Florida mainland. The Keys railroad was destroyed by a category 5 hurricane in 1935, but was replaced in 1938 by the Overseas Highway (U.S. Highway 1). Curiously, in this tropical humid environment, one of the greatest limitations to human settlement was water. Surrounded by the seas, the small islands typically have brackish, unpotable groundwater. A water pipeline from the Florida mainland was therefore constructed to supply military installations at Key West during World War II. The Keys aqueduct, together with the development of air conditioning systems and mosquito control efforts, set the stage for a post-war development boom. With its blue seas and mild winter weather, the Keys became one of the most popular tourist destinations in the eastern United States, especially during the winter.



Photograph by Joe McAuliffe

An epiphytic bromeliad on the side of a living stem of a Keys tree cactus.

This development had a big environmental price. Private homes, motels, resorts, restaurants, and strip malls with supermarkets and discount stores have replaced natural habitat. Hardwood hammocks, because they are found at slightly higher elevations above sea level, have been impacted the heaviest by this development. Precious parcels of hardwood hammocks remain in small preserves on only a few of the islands. Unquestionably, the disappearance of suitable habitat is one of the largest factors responsible for the long-term decline of the Keys tree cactus. As early as 1917, botanists noted that the tree cactus was becoming scarce on the Keys due to clearing of hardwood hammocks for development and firewood.

Recent mortality

In the largest remaining protected tracts of hardwood hammocks, many cacti have died within the last decade in some, but not all, populations, suggesting that other factors (in addition to habitat loss) were affecting this species. Hypothesized causes included (1) pathogens, (2) herbivory and other damage by mammals, including rodents and the native Key whitetail deer, (3) increase in tree canopy development and shading within hammocks, and (4) impacts of recent hurricanes, including saltwater flooding. The studies and sampling in 2007 were designed to investigate these different possible factors.

The hypothesis regarding pathogenic agents was tested by studying the tissues of dying plants, which had been collected at the field sites. Samples examined by plant disease specialists at the Florida Department of Agriculture and Consumer Services indicated, however, that a fungus that was present in the samples was not pathogenic, but rather was a secondary infection due to weakening of plants by other causes. Without strong evidence for plant disease as a cause of declines, the emphasis shifted to field studies comparing ecological conditions in areas where populations had declined precipitously with areas experiencing considerably lesser declines.

The field research team, consisting of Fairchild botanists Dr. Joyce Maschinski, Joie Goodman, and Cheso Walter, together with



Dr. Joe McAuliffe preparing and testing soil samples in motel room after a day in the field.

Dr. Joe McAuliffe, developed and employed novel sampling and analytical methods. The team returned to plants originally measured and tagged in the early 1990s; one of the populations had experienced a loss of over 80% of plants between 1994 and 2007, whereas the other had only a moderate loss of about 20%. Comparison of ecological conditions in the two areas proved to be a key approach in gaining a better understanding of factors impacting the cactus.

One of the techniques the team devised was the measurement of tree canopy cover at the location of each live or dead cactus, using digital photography. To do this, we placed a digital camera, lens directed straight up, on top of a 6.56 foot tall (2 m) pole and photographed the overhead canopy. Each location was photographed by two separate cameras, with more than a hundred photos taken. The images were then analyzed using a public domain, computer-based image

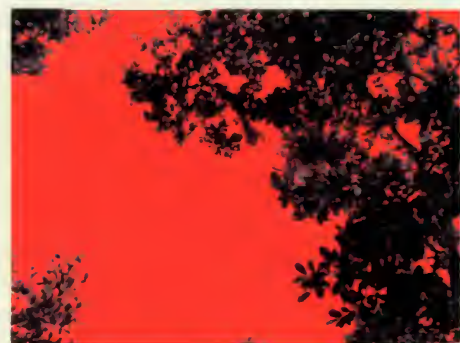
analysis program, (*ImageJ*) that was originally developed for biomedical research and that is freely available from the National Institutes of Health (NIH). We used *ImageJ* to convert each color photograph into a grayscale image, with white to very light gray representing areas of open sky, and black to dark gray representing areas of overhead canopy cover area. The program allowed us to automatically isolate and select just the pixels representing either open sky or overhead canopy and measure the corresponding area. We calcu-

lated percent canopy cover by dividing the area in pixels of the overhead canopy by the total area of the image in pixels. Dr. Carla McAuliffe (married to Joe McAuliffe) contributed considerably to this application, by preparing the detailed instructions for the image analysis procedures and techniques. Carla works full-time for a not-for-profit education, research, and development organization, Technical Education Research Centers (TERC), based in Cambridge, Massachusetts. TERC is dedicated to improving math, science, and technology teaching and learning. As an offshoot to her contribution to the Keys tree cactus project, she developed a high school environmental science investigation that uses the technique and analysis methods in an exercise that measures forest canopy characteristics.

Many other measurements were taken at the location of each live or dead cactus, including the identity and trunk diameters



Black and white and processed images of the overhead canopy used to measure the amount of tree canopy cover.



of neighboring trees, size and condition of each cactus, and evidence of any kind of damage or injury to cacti. In addition to these data, soil samples were taken for soil salinity measurements. In the evenings, soil samples were prepared and analyzed at the motels where we stayed, using portable laboratory equipment for salinity testing.

These investigations showed that the factor most strongly associated with plant mortality was elevated soil salinity. Most of the Keys are only a few feet above sea level and are flooded by seawater during hurricanes. The site that experienced the highest cactus mortality averaged only 2.8 feet (0.86 m) above sea level, whereas a nearby site with low mortality averaged somewhat higher, 3.4 feet (1.17 m) above sea level. This small difference contributes to substantial differences in the duration of salt water flooding associated with hurricanes. In 2005 alone, three major hurricanes (Katrina, Rita, and Wilma) impacted the Florida Keys. Hurricane Wilma brought high storm surges and flooding of areas occupied by cacti. According to one State of Florida biologist, the island containing the declining population was flooded by salt water for lengthy periods. Saturation of the soil by saltwater is a potentially lethal stress to these plants, and although the salts can eventually be leached by rain, the frequency and duration of flooding no doubt is a major factor. Nearly one and a half years after the 2005 saltwater flooding, surface soil from the area where there was high cactus mortality had salt contents more than double that of the nearby area with low mortality. Population declines were not associated with increased shading by the tree canopy. Instead, the cactus population that experienced the greatest mortality was associated with less canopy cover, probably due to relatively recent damage of trees by recent hurricanes. Physical damage of cacti during hurricanes may also have contributed to some of the declines.

Ironically, another contributing factor to the decline on one of the islands may be damage inflicted by another endangered species—the diminutive Key deer. The Key deer is the smallest subspecies of the common white-tailed deer. Adult bucks are only about thirty



A young Key deer buck passed within a few feet while we ate our lunch.

Photograph by Joe McAniff

inches (76 cm) tall at the shoulder and weigh about eighty pounds (36 kg). In the early 1920s, Key deer occurred over a range of sixty miles within the 100-mile-long chain of the Florida Keys. Although hunting of this deer was banned in 1939, widespread poaching and habitat destruction nearly eliminated the Key deer. By the early 1950s, the population in the wild had dwindled to fewer than fifty animals and was on the brink of extinction. In 1957, the National Key Deer Refuge, administered by the U.S. Fish and Wildlife Service, was created on Big Pine Key. The population has since rebounded to as many as 700-800 animals. Key deer now occur in only about one-tenth of their original range, and most are found on the National Key Deer Refuge. The refuge is only 8,542 acres in size, a rather small area for so many deer. Due to browsing by deer, plant species composition has been affected in some areas of the refuge. Although the deer apparently do not eat the Keys tree cactus stems, damage is inflicted in another manner. Mature bucks

use the upright stems and trunks of the cacti (as well as trunks and branches of woody plants) to annually polish their new sets of antlers. Every year, mature bucks lose their old set of antlers and grow a new set. After the bony antler reaches full development, an exterior, skin-like covering, the velvet, is shed and bucks rub their antlers against solid objects to remove the velvet. We recorded many cacti with damage apparently inflicted by deer as they polished their antlers against the plants' succulent stems.

Securing material for propagation

One of the ways that the Keys tree cactus reproduces is by vegetative sprouting of stems that have broken off the parent plant. This may be an adaptation to an environment in which occasional hurricanes periodically blow down parts of plants and even whole plants. As part of the continuing effort to secure the *ex situ* populations maintained at both Fairchild and the Desert Botanical Gardens, living cuttings were collected from naturally downed stems for propagation. The greenhouse plants mentioned at the start of the article were grown from those cuttings. These plants will eventually flower and produce seeds, which will be used to build the conservation seedbank. These seeds could potentially be used for reintroductions to sites in the wild, and to provide plants for genetics studies of the various populations.

Hope for the future

Many questions and challenges remain in the efforts to learn more about the Keys tree cactus and to ensure its survival. Additional investigations are needed to learn more about factors limiting sexual reproduction in the wild. One goal of the current, as well as future, efforts will be to identify suitable hardwood hammock preserves for reintroduction of the cactus. The living collections at both Fairchild and Desert Botanical Gardens will be essential for those reintroductions. Although the two institutions deal with plants from strikingly different settings, they share the mission of conserving native plants and environments. Through cooperative work, both institutions have contributed significantly to the conservation of this unusual endangered cactus species from the Florida Keys. ❁



Damage to succulent tissues at base of this cactus was probably caused by Key deer.

Photograph provided by Fairchild Tropical Botanic Garden

ANNUAL REPORT

The Year in Review

The 2007-2008 year in the Garden has been an exciting time of growth.

The highly successful *Tending the Garden* Campaign is enabling the Garden to enhance exhibitions and educational programs, and to hire new scientists to complete our research team. Because we now have an endowment, we needed to form an Investment Committee. In July 2007 this committee, with approval from the Board of Trustees, selected the company of Beacon Pointe to manage these funds.

In September, the Garden was selected to receive a challenge grant award from The Kresge Foundation. The Garden will receive an \$850,000 grant if \$3.8 million in new gifts are raised by December 2008 to complete the *Tending the Garden* Campaign.

Also during September, our new website was up and running, with updates continuously taking place. If you haven't checked it out yet, may I suggest you go and visit; it will be well worth your time—dbg.org. It's fantastic!

In October, our new Deputy Director, Michael Smith, joined the Garden staff. Michael came to us from the Walters Art Museum in Baltimore, and is managing all of the visitor-related departments: Facilities, Marketing, Rangers, Retail, and Visitor Services.

In November, the Board of Trustees approved the Garden's new logo. PS Studios, an advertising and graphic design firm, had worked with volunteers, staff, and trustees for more than a year to create this logo, which retains the agave, slightly modernized, and uses the script to draw the eye up to the plant.

December saw a reenergized *Luminaria*, the 30th anniversary. It was very successful despite three rained-out nights.

In January 2008, the Board of Trustees approved a twenty-year master plan, giving the Garden a blueprint for the future. This was two years in the making, involving about fifty volunteers, staff, and trustees. We were very fortunate to have the company of Spurlock Poirier to guide us through this very complicated project.

Also in January, the Trustees approved bringing a Chihuly exhibit to the Garden. Artist Dale Chihuly exhibits his sculptural glass all over the world, including at a number of gardens in the United States, but has never before exhibited in a desert garden where all of the pieces will be outside.

February marked the month when the *Tending the Garden* Campaign went over \$16 million, including current and planned gifts. As of April 25, we still have \$811,000 to raise to meet The Kresge Challenge.

In March, the Wildflower Trail was ablaze with color and the Butterfly Pavilion delighted all who entered its doors. The whole Garden looked spectacular because of plentiful rainfall during the past winter.

April brought us the opening of the new Sybil B. Harrington Cactus and Succulent Galleries. The Garden adopted a museum concept for displaying its collections. These two Galleries are stunningly planted. Without taking away from the core garden, they allow visitors to see how design can accentuate the plants and how color and shape can present an entirely different experience. These two Galleries are the first of the five new or renovated exhibits that the Campaign is funding in the Garden.

At the end of May we will begin to create the new Ottosen Entry Garden. The work will be done during the summer, with the opening planned for November. Following this will be the development of an Agave/Yucca Forest, and then the renovation of the Center for Desert Living.

Achieving all of this year's projects took strong leadership along with much time, energy and dedication on the part of the staff, the volunteers, and trustees. Thank you all.

Thank you for being members. Visit often; enjoy the different seasons, the beauty, and the serenity of the Garden.

Oonagh Boppart

Oonagh Boppart, President, Board of Trustees

Ken Schutz

Ken Schutz, The Dr. William Huizingh Executive Director



FINANCIAL STATEMENTS

Fiscal year 2007 reflected an exciting year of new opportunities and new vision, with a common theme of investing in the Garden's future. As of December 31, 2007, the highly successful *Tending the Garden* capital campaign approached its goal by generating nearly \$14 million in commitments from Garden members, trustees, and local philanthropists. Such funds allowed the Garden to set in motion plans for new exhibits, a dramatic entry garden, additional research efforts, and increased educational programs for adults and children. In addition to making the Garden a more interesting and educational venue for Valley residents and visitors from across the nation, campaign proceeds have generated significant endowment funds that will ensure the financial security of the Garden for years to come.

Financial highlights of 2007 include the following:

- Admission revenue reflected the combined results of gate revenue, school groups, and adult tours. Improvement resulting from increased numbers of tours offset decreased attendance. Fewer people visited the Garden primarily because of a dry winter season resulting in a lack of significant spring wildflower bloom. Extended heat in the late summer and early fall also negatively impacted attendance.
- Membership revenue increased 23%, demonstrating strong interest and support in the Garden and its programs primarily from the local community.
- Other key revenue sources for the Garden generated impressive growth, including a 13% increase in facility rentals, a 19% increase in beverage sales, and a 105% increase in interest income. The latter resulted primarily from increased endowment funds and other campaign pledges.
- Contributions decreased 9%; financial support from many donors was directed to the *Tending the Garden* Campaign. Such decrease was budgeted and is to be expected during an aggressive capital campaign.
- Expenses continued to be well-managed. Total expenses rose by nearly 7% because of a 32% increase in fundraising costs associated with the capital campaign. Program expenses increased by 8% because of additional exhibits and programs to meet the needs of members and visitors. Payroll and other expenses continued to be appropriately managed and were below budgeted goals for 2007.

The Garden's balance sheet continued to grow and demonstrated increased liquidity. Cash and equivalents improved by 185%, totaling \$8.5 million at fiscal year end. Cash restricted for long-

term assets, including the new succulent and cactus galleries as well as the spectacular planned entry garden, increased 50% while cash restricted for endowment improved a sizeable 383%, totaling \$2.9 million at year end. Further improvements in liquidity will be occurring in fiscal year 2008 and beyond as additional campaign pledges are committed and collected.

Leverage remained adequate as the Garden incurred no additional debt and decreased its long-term bond obligation with a \$300,000 discretionary payment. The remaining bond balance of \$8.3 million is due in 2035; assets sufficient to retire all bonds are either on hand or assured by investment income.

An important measure of the Garden's financial well-being is its ability to generate adequate cash flow. Management continued to manage cash flow in a prudent manner during a period of seasonal revenue declines in the summer months, and net cash flow from operations increased by \$618,000 to \$1.3 million.

Reviewers of these reports should be aware that the balance in the account "Property and Equipment" will decline each year by an amount equal to the excess of recorded depreciation expense over the cost of newly acquired property.

2007 was indeed a year of long-term investment in the Garden's future. Continuing support from Garden members, generous contributions by corporate and individual philanthropists, strong leadership by the Garden's management team, an active and highly-engaged Board of Trustees, and a successful capital campaign led by Oonagh Boppart and Hazel Hare ensure that the planned investments for 2008 and beyond will create new experiences and continue to support the growing interest and passion for the Garden's important contribution to the Valley.



Scott T. Schaefer, Treasurer, Board of Trustees

It's important to note that accounting standards for not-for-profit organizations were altered in 2007 and include a far more aggressive analysis of an organization's operating policies and controls. The Garden's accounting firm issued an audit report for 2007 indicating that the financial statements fairly represent the organization's financial condition, with no material issues regarding internal controls. Compliance with the new accounting standards remains unquestioned; the Garden's management team is to be congratulated on ensuring your investment in the Garden is managed appropriately.



Statement of Activities

Year ended September 30, 2007
(before depreciation)

Revenue	2006-2007
Gross Profit on Retail & Beverage Sales	\$ 1,397,593
Admissions	1,690,081
Contributions, Grants & Special Events	6,472,803
Investment Income (net)	848,766
Memberships	1,265,874
Other Revenue	<u>818,774</u>

Total Revenue \$12,493,891

Expenses

Program Expenses	\$ 4,233,639
Fundraising & Membership	1,028,090
General & Administrative	928,573
Retail	<u>1,698,017</u>

Total Expenses \$ 7,888,319

Change in Net Assets \$ 4,605,572
(before depreciation)

The Statement of Activities above reports the results of Garden Operations excluding the effect of depreciation expense. Depreciation refers to the systematic allocation of the cost of long-lived assets, including buildings, furniture and fixtures, and equipment, to the periods that benefit from their use. Recording depreciation has no effect on the liquidity or cash flow of the Garden. It reflects an estimate of the using up of the economic value of tangible assets. In the financial statements it reduces the Change in Net Assets (and, therefore, Total Net Assets) and the carrying basis of Property and Equipment.

Unlike industrial firms, not-for-profit organizations do not provide for the addition or replacement of major long-lived assets out of operations. Historically such entities look to capital contributions for those improvements. Hence, the financial performance for not-for-profits is best evaluated by analyzing operating results excluding the effects of depreciation. Depreciation expense recognized in the Garden's records for each fiscal period reported here was approximately \$929,000.

Auditor's Opinion

The Garden has received an unqualified opinion from its auditors, Schmidt Westergard & Company, PLLC, on the audit of its financial statements for the year ending September 30, 2007. Copies of the audited financial statements are available upon request from the Desert Botanical Garden business office at 480-481-8155.

Statement of Financial Position

Information as of September 30, 2007

Assets	2007
Cash & Investments	\$ 8,506,946
Pledges & Other Receivables	451,295
Inventories	<u>186,120</u>

Total Current Assets \$ 9,144,361

Cash & Investments (noncurrent)	-
Pledge Receivables (noncurrent)	848,402
Property & Equipment	14,693,484
Bond Issuance Cost	85,019
Other Assets	<u>232,825</u>

Assets Restricted to Investment in Long Lived Assets and Improvements

Cash and Cash Equivalents	\$2,699,812
Pledge Receivables	422,639

Assets Restricted for Endowment

Cash and Investments	\$2,965,125
Pledge Receivables	762,035
Beneficial interest in remainder trust	241,423

Total Assets \$32,095,125

Liabilities

Accounts Payable	\$ 243,790
Accrued Expenses	253,995
Deferred Revenues	876,370
Accrued Interest & Annuity Payment	38,705

Total Current Liabilities \$ 1,412,860

Deferred Revenue and Annuity Payment, less current portion	132,303
Bonds Payable	<u>8,300,000</u>

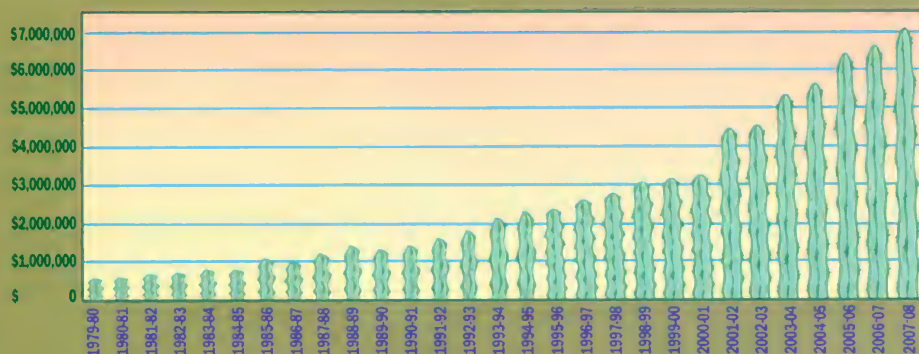
Total Liabilities \$ 9,845,163

Total Net Assets 22,249,962

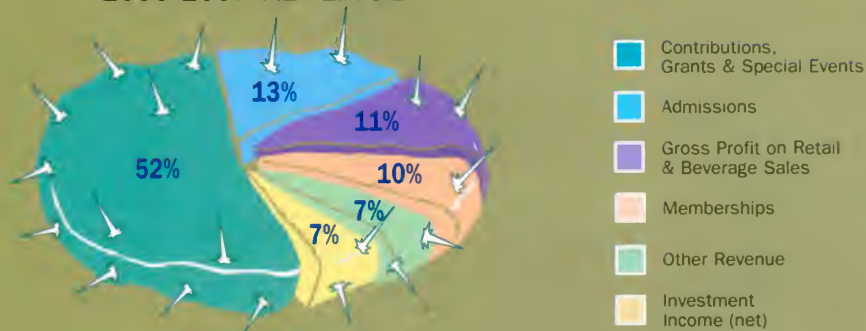
Total Liabilities & Net Assets \$32,095,125



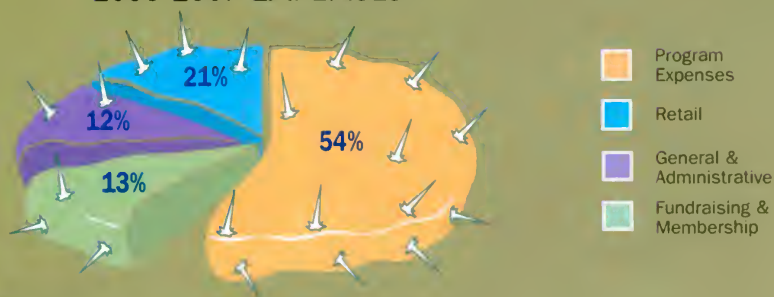
Desert Botanical Garden Annual Budgets



2006-2007 REVENUE



2006-2007 EXPENSES



THE MISSION OF THE DESERT BOTANICAL GARDEN:

The Garden's commitment to the community is to advance excellence in education, research, exhibition, and conservation of desert plants of the world with emphasis on the Southwestern United States. We will ensure that the Garden is always a compelling attraction that brings to life the many wonders of the desert.



Sybil B. Harrington Cactus and Succulent Galleries



The Desert Botanical Garden invites you to explore the new Sybil B. Harrington Cactus and Succulent Galleries. Experience the spectacular diversity of cacti and succulents from around the world.



The Garden by the Numbers

For Calendar Year 2007

Visitors

Total yearly attendance: 295,000

Horticulture

Acres at Desert Botanical Garden: 145

Acres under cultivation: 50

Number of graduates from the Desert Landscaper School in 2007: 98

Number of Desert Landscaper School graduates to date: 887

Number of calls to Plant Questions Hotline: 1,074

Number of annual plant sales: 2

Number of items sold at plant sales: 43,715

Living Collection

New plant accessions: 363

Total living accessions: 11,799

Total living accessioned plants: 22,294 of which 3,326 are seeds

New species added: 22

Total plant species: 3,798

Total taxa (varieties, subspecies, hybrids): 4,231

Rare and Endangered

Total accessioned seeds collected: 742

Total accessioned plants: 327

Total collection of seeds and plants: 47 species

Herbarium

Total Herbarium specimens: 60,345

Library

Number of books: 7,212

Number of botanical prints: 600

Number of journal and newsletter titles: 342

Number of maps: 2,376

Volunteers

Number of Volunteers: 1,012

Volunteer Fair attendance: 148

Volunteer hours: 66,242

New volunteers: 175

New Teen Volunteer Program: 48

New Hardy Perennials: 8

Total active Hardy Perennials: 153

25-year Volunteers: 12

Volunteer Awards

100 hours + served in 2007: 234

Hours Awards accumulated over the total length of service:

500 hours: 19 5000 hours: 2

1000 hours: 18 6000 hours: 1

2000 hours: 10 7000 hours: 1

3000 hours: 7 12,000 hours: 1

4000 hours: 6 16,000 hours: 1

Tours and Education

School tour participants: 39,538

Teacher Open House attendance: 778

Students in education opportunities for adults: 2,569

Classes for adults: 273

Hikes & trips: 46

Students in Botanical Illustration School: 322

Children in Eco Camp: 168

Children in Sammy Seedlings Preschool Program: 132

Participants in Target Kids' Corner Program: 2,013

Staff

Full-time: 83

Part-time and/or seasonal: 56

How to reach us:

Write: 1201 N. Galvin Parkway
Phoenix, AZ 85008

Call: 480-941-1225

Fax: 480-481-8124

TDD: 480-754-8143

Website: dbg.org



In Appreciation

March 16, 2007 - March 15, 2008

The Desert Botanical Garden is grateful to all 18,200 members and donors for their support. With this In Appreciation, we are introducing a new recognition format which the Garden plans to publish annually, in conjunction with the Annual Report. Previously, this listing recognized individual members by membership level rather than overall giving. Acknowledged in this section are members and donors giving \$300 or more over the past year, from March 16, 2007 - March 15, 2008. Included are memberships and unrestricted gifts to support the Garden's annual operations.

+ Patrons Circle members, including Saguaro, Curator's, Director's, President's and Founders Circle contributors, are identified with an +.

Please note that for the previous quarter gifts, annual appeal gifts, and contributions of \$150-299, Tending the Garden Campaign contributions of \$150 or more are recognized in separate sections.

\$10,000 - \$24,999

Robert Bulla⁺
Lee & Mike Cohn⁺
Jacquie & Bennett Dorrance⁺
Hazel Hare⁺
William Huizingh⁺
Barbara & Donald Ottosen⁺
Louise C. Solheim⁺

\$5,000 - \$9,999

Connie & James Binns⁺
Ardie & Stephen Evans⁺
Jan & Thomas Lewis⁺
Maxine & Jonathan Marshall⁺
Marta Morando & William Moio⁺
Nancy Swanson⁺
Connie & Craig Weatherup⁺

\$2,500 - \$4,999

Irene & E. David Metz⁺
Jennifer Theobald⁺
Betty Lou Summers⁺
Rosellen & Harry Papp⁺
Susan & Bryan Albee⁺
Marlene & Ralph Bennett⁺
Joy & Howard Berlin⁺
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At Home in Your Desert Garden: Vines and Groundcover

by Angelica Elliott, Curator of Wildflowers

Visitors to our Plant Sales often seek out vines and groundcovers for use in their landscape. Vines are usually desired either to disguise an unsightly view or to screen a neighbor's yard. Groundcovers are also in high demand because most of the native plants used for groundcovers do not grow very high or wide and therefore are useful for small spaces. A wide assortment of Sonoran Desert vines and groundcovers are available to the landscape market. Many of these natives, while drought tolerant, provide an interesting array of form, flower color, and texture.

Before selecting a vine, it is important to assess landscape requirements such as climbing support, deciduous versus evergreen, size, and sun exposure. Native vines need support, with many actively growing during the warmer months. Support can come from a trellis or even a shrub. However, it is not recommended to use a beloved tree as a support for a vigorously growing vine as it can do harm by adding weight to the tree canopy and essentially smothering the tree. Many of our Sonoran Desert vines are deciduous, but there are a few that remain evergreen. Two notable evergreen vines for use as screening are *Callaeum macropterum* and *Clematis drummondii*.



Yellow orchid vine, *Callaeum macropterum*.

Yellow orchid vine, *Callaeum macropterum*, occurs in Baja California, Sonora, and south through most of Mexico. The vine blooms in late spring with yellow flowers followed by papery, winged fruits. It is fast-growing and does best with full sun exposure. It can be frost tender below mid-20s°F, but recovers quickly during the warm months. In the infamous freeze of 2007, our *Callaeum macropterum* near Archer House remained virtually unscathed with just a few crispy growing tips. *Callaeum* requires support to grow vertically. Without support it is a twining shrub up to six feet tall and wide; if supported it can grow up to thirty feet tall.



Virgin's bower, *Clematis drummondii*.

Virgin's bower, *Clematis drummondii*, occurs in southern Arizona, New Mexico, and Texas into Mexico. Virgin's Bower can grow in full sun or light shade. It is a vigorously growing vine that can reach up to thirty feet if given support. The flowers are an inconspicuous pale green, but the showy plumed fruits borne in clusters can make a striking landscape effect, especially when highlighted by the sunlight.

Two more vines worthy of use in the landscape are *Janusia gracilis* and *Maurandella*



Slender janusia, *Janusia gracilis*.

antirrhiniflora. These much smaller and more delicate-looking vines work well in small spaces or for use in a naturalistic landscape. Often, these vines can be found crawling among jojoba or creosote in their natural habitat.

Slender janusia, *Janusia gracilis*, occurs in west Texas to Arizona and Mexico. Slender Janusia is in the same family as *Callaeum macropterum* (Malpighiaceae). This is an excellent vine to use for creating a naturalistic landscape as it grows among the many Sonoran Desert shrubs. Slender Janusia produces yellow flowers from April through October, especially after the summer rains. The flowers produce oil instead of nectar; the primary pollinators are bees that are able to scrape up the oil and use it for their provisions. It is also an excellent forage plant for the desert tortoise. *Janusia* can grow up to ten feet long if given support.

Snapdragon vine, *Maurandella antirrhiniflora*, is found from California to Texas and into Mexico. The flowers come in two distinct color forms: red and pale violet. It can reach up to six feet if given support and is deciduous during the winter months,



Snapdragon vine, *Maurandella antirrhiniflora*.



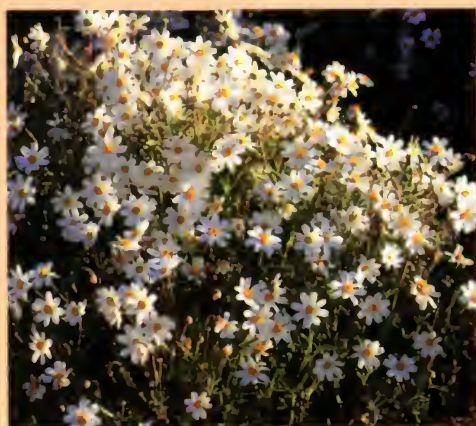
Goodding's verbena, *Glandularia gooddingii*.



Whitewoolly twintip, *Stemodia durantifolia*.

but will resprout during the warm months. Flowers bloom during the spring and into the fall, and attract hummingbirds.

Groundcovers are usually defined as a low-growing plant whose primary role is to conceal the ground in a man-made landscape. In the Sonoran Desert we have many plants that can fill this role. Here are three common natives that can be used as groundcovers, plus two newcomers.



Blackfoot daisy, *Melampodium leucanthum*.

Blackfoot daisy, *Melampodium leucanthum*, is found in the limestone soils of the Chihuahuan desert ranging west into the Sonoran Desert in Arizona. Blackfoot daisy prefers full sun, but can take light shade. Honey-scented flowers appear in the spring and continue into the fall months. Plant en masse or with other

perennials such as penstemons to create a striking landscape effect.

Goodding's verbena, *Glandularia gooddingii*, is a hardy native much preferred over the exotic verbenas for use in the landscape. This native is extremely drought tolerant and can be used around agaves and cacti. Desert verbena prefers full sun and well-draining soils. Flowers are extremely fragrant and frequented by butterflies and moths. They bloom almost year round, are hardy, and reseed freely in the landscape without being a nuisance.

Fleabane, *Erigeron divergens*, grows from four to twenty inches tall and can form a dense, showy carpet of white or lilac colored flowers. It can be short-lived, but will reseed freely in the landscape. Fleabane blooms most heavily in the spring with sporadic flowers in the summer and fall months, especially after summer rainfall. It is an easily grown groundcover that does not require much irrigation and thus can be planted near succulents.

Two new groundcovers worthy of mention are *Stemodia durantifolia* and *Monardella arizonica*.

Whitewoolly Twintip, *Stemodia durantifolia*, is a native to Arizona, but can also be found in southern Texas and California. It can be used as a groundcover in shady

or moist areas. It blooms most heavily in late spring through the fall. The flowers are small, but when in full bloom can be arresting.



Arizona monardella, *Monardella arizonica*.

Monardella arizonica is endemic to Arizona. It can take full sun or light shade in the low desert regions. It blooms late summer and into the fall. The flowers are lilac colored and the leaves are extremely fragrant. The mature size is one square foot.

So if you are looking for a groundcover or a vine for a troubled spot in your landscape, give the above-mentioned plant species a try, as many of them have proven their worth in the desert landscape setting. 🌱

Ottosen Entry Garden

by Elaine McGinn, Director of Planning and Exhibits

With the opening of the new Sybil B. Harrington Cactus and Succulent Galleries in April, the final planning stages of the Garden's next major endeavor, the Ottosen Entry Garden, will be launched. As part of its \$16 million *Tending the Garden Campaign to Endow the Future*, the Desert Botanical Garden will create a new entry experience to welcome visitors. Funded by a generous gift from the Ottosen Family Foundation, the new exhibit will become the grand lobby of the Desert Botanical Garden, announcing to visitors that they have arrived at a unique and exciting Southwest destination.

The current entry and exit sequences to the Garden were completed in 2001 as part of the \$17 million *Growing a Legacy for Generations* Campaign. The Ottosen Entry Garden will celebrate and build upon the design features and structures created at that time. Goals for the new project are centered on improving the visitor experience. The primary goal is to create more drama and beauty by opening the vista to the beautiful Papago Butte and by showcasing large specimen cacti and succulents when visitors first arrive. In addition, by improving visitor circulation, increasing access to tours and the Garden Shop, and providing shaded seating options, the new design will make the arrival experience more enjoyable, rewarding, and memorable for visitors. The Ottosen Entry Garden will be the visitor's first impression of the Desert Botanical Garden and an essential part of the overall experience.

Exhibit Elements and Themes

Planning for the Ottosen Entry Garden has been in progress for many months. Staff, volunteers, and board members have been working with the award-winning San Diego landscape architect firm Spurlock Poirier. Led by Principal Andy Spurlock, the design team established a clear goal of creating an introduction area to the Garden that highlights the sculptural quality of plants set against iconic local landscape features like the Papago Park red buttes, distant desert mountains, and the river beds and canals that cut through the Valley floor.



Ottosen Entry Garden plan view by Spurlock Poirier.



Ottosen Entry Garden aerial perspective by Spurlock Poirier.



Ottosen Entry Garden perspective by Spurlock Poirier.

As visitors approach the Desert Botanical Garden they enter a world where a unique interaction with nature speaks strongly about the beauty and diversity of desert plants. A dramatic entry experience will confirm the Garden's identity for the visitor, and spark anticipation and curiosity about the plants and displays within. The new entry garden will take advantage of location, approach, orientation, form, and color to communicate the Desert Botanical Garden's underlying messages about the exhibit and its relationship to the natural environment and to the community.

The Ottosen Entry Garden will incorporate several design themes, including a *Terrace Garden*, *Red Canal Garden*, and a *Basin Garden* to showcase Sonoran Desert plants. There will be areas for gathering and for reflection, and a distinctive water feature that will emphasize water's unique place in the desert landscape. Strong organizational elements will play an integral part in the spatial design of each display.



The approach to the admissions plaza from the bridge reveals the first glimpse of the interior of the Garden. The planting design will be welcoming and will subtly transition from the natural desert area to a softer, more garden-like feeling. Beyond Admissions, the first space the visitor will experience is a full sun garden with bold and dramatic plantings leading the eye to a spectacular view of the butte beyond. The plant palette employs the cooler colors of blues, grays, and purples, which coordinate with the lavender rock covering.



The **Basin Garden** showcases the amazing columnar cacti of the western deserts, featuring plants that capture the desert light. Species in this area include cholla, saguaro, cardon, palo blanco, boojum, and organ pipe. The effect of light will be heightened by contrast with a dark brown ground covering. Visitors will move from open to fully enclosed spaces where agaves and hedgehog cacti will create flowering mosaics.

The **Canal Garden** is a mix of primarily Sonoran Desert plants selected for characteristics that harmonize with surrounding red stone walls. The stepped walls of this garden will let the visitor experience the planting at a variety of heights. A water feature here will provide a strong architectural quality connecting the spaces.

The **Terrace Garden** is conceptualized as a mountain on which the planting changes as the visitor moves up the terrace. Barrel cacti and grasses at the base give way to shrubs in the middle and then to succulents and tree aloes at the top. This garden includes a canopy of trees, which gives the visitor an understanding of the different species and microclimates that exist in the desert.

Construction is scheduled to begin in June with completion of the garden projected for November 2008. ✿



Photographs by Adam Rodriguez

Online Registration Now Available



Great educational programs are just a click away—dbg.org. Online registration provides an added layer of customer-friendly flexibility, convenience, and security. Just select desired programs, then safely pay using your Visa, MasterCard, Discover, or American Express card. You will receive an email confirmation, followed by a letter of confirmation.

Remember the benefits of Garden membership: receive a 20% discount on education programs by logging in using your member identification number. Registrations are taken on a 'first-come, first-served' basis; please register early as programs fill quickly. If you have questions please contact Andrea Maddy at 480-481-8146 or amaddy@dbg.org.

Register Now!

The Desert Botanical Garden's *Volunteers in the Garden* invites you to participate in the first annual **Charity Golf Tournament, Golfin' in the Desert**, September 20, 2008. The event will be held at one of the Valley's premier golf courses, ASU Karsten Golf Course.

For information on registration, sponsorships or donations visit dbg.org, call Amy Walker at 480-220-0305 or e-mail her at ajamy@fastq.com.

Tell all your friends and neighbors and let's make this the best golf tournament ever!

Summer Eco Camp Adventure

Calling All Kids: Join us this summer for an exciting eco-adventure sure to make your summer shine! Day Camps, Night Camps and an overnight San Juan River Trip for Teens...there's something for everyone at the Desert Botanical Garden this summer. Visit dbg.org for more information or call 480-481-8146.

Desert Landscaper School Certification Program



Classes start September 9, 2008

Register now to be included in the 12th year of this popular 30-week certification program.

Spend one morning a week within the beautiful surroundings of the Garden learning in a practical hands-on style complemented with classroom studies.

Professionals and non-professionals alike will learn the best horticultural practices from the Garden's curators, expert horticultural staff and guest instructors. Successful graduates become Certified Desert Landscapers acknowledging their great achievement.

The course is taught in both English and Spanish. For more information: go to dbg.org (on-line registration available), email at dls@dbg.org, or call 480-481-8161.

Winner of "Dancing Flora" Photo Contest



"Cactus Flower," *Echinopsis candicans*, by Robert Meyers, Mesa, Arizona.

This cactus typically blooms at night, but the large white flower was still open during the day thanks to clouds that blocked much of the sunlight.

The "Dancing Flora" contest sought photographs, taken by amateur photographers, of cacti and succulents that appear to be performing an interpretive dance, attempting to send a message, or striking a peculiar pose. Photos were evaluated based on artistic composition, use of lighting, unique subject matter, and/or the ability to tell a story through the image.

Meyers won four tickets of his choice to Garden events, plus bragging rights for having his photo published in *The Sonoran Quarterly*.



Flashlight Tours: Explore the Garden after Dark

Experience a magical twilight adventure in the Garden this summer. Witness the mysterious and beautiful opening of night-blooming flowers, smell the damp air of the pond while listening to singing toads and crickets, and examine a tarantula close up. You will need your flashlight to light the way on this nocturnal journey, which lasts from 7 to 9 p.m.

Available only on Thursday and Saturday evenings during May, June, July and August. Flashlight Tours are included with admission. Reservations recommended by email or phone: flashlight@dbg.org; 480-941-3510.

Photograph by Adam Rodriguez



The Sonoran Quarterly

Desert Botanical Garden

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www.dbg.org

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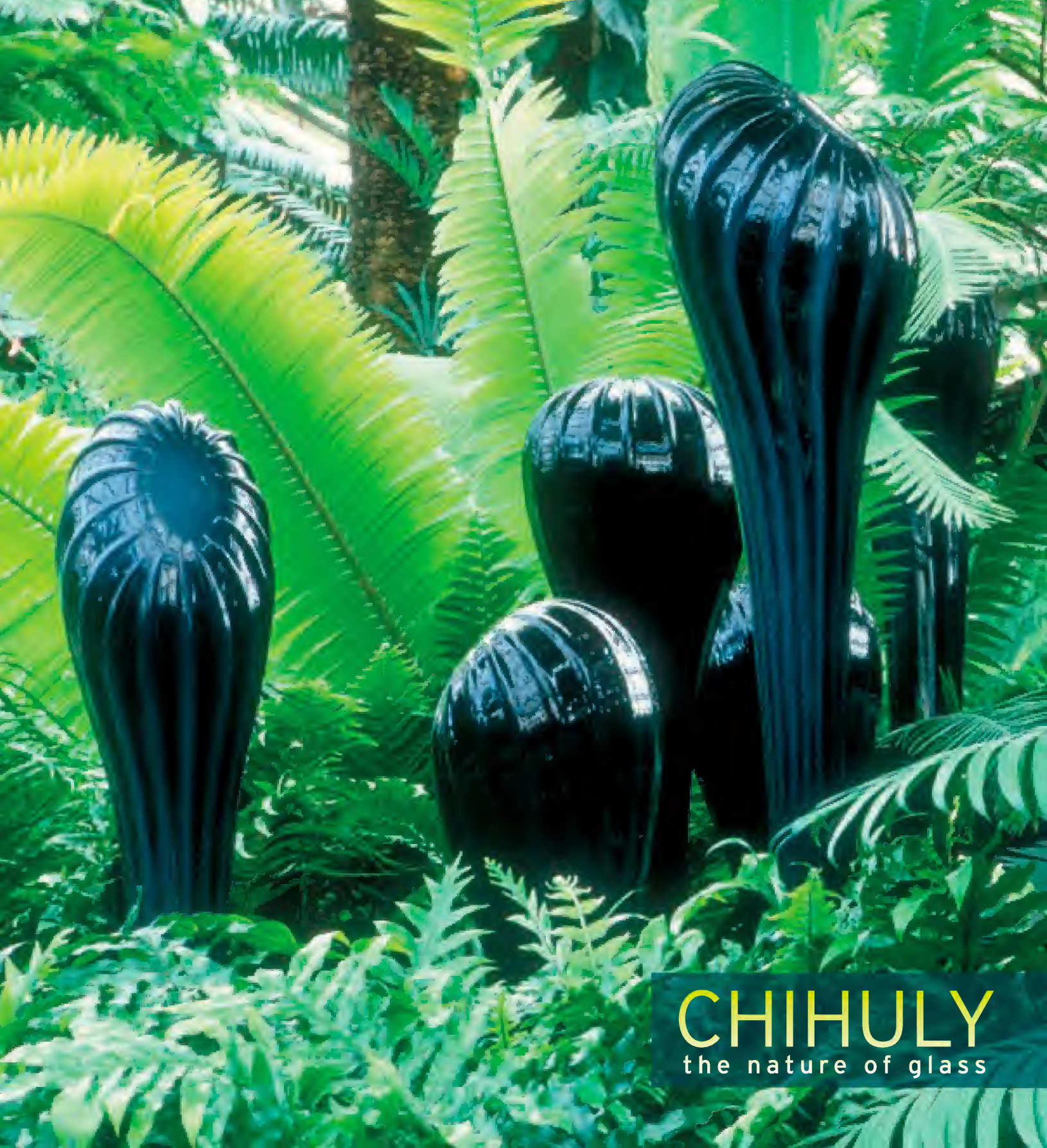
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The mission of the Desert Botanical Garden:

The Garden's commitment to the community is to advance excellence in education, research, exhibition, and conservation of desert plants of the world with emphasis on the Southwestern United States. We will ensure that the Garden is always a compelling attraction that brings to life the many wonders of the desert.

SONORAN QUARTERLY

FOR MEMBERS AND FRIENDS OF THE DESERT BOTANICAL GARDEN PHOENIX, ARIZONA SEPTEMBER 2008, VOLUME 63, NO. 3



CHIHULY
the nature of glass

PEOPLE, GARDENS, AND ART

DALE CHIHULY'S WORK IS INFORMED BY NATURE, HIS AESTHETIC IS ORGANIC, AND HIS FASCINATION WITH PLANTS AND COLOR AND LIGHT IS ABUNDANTLY APPARENT IN ALL THE ART HE CREATES.



Anthropologists tell us that our ancestors made a radical shift in how they lived about 10,000 years ago. After surviving in small nomadic hunter-gatherer communities for hundreds of thousands of years, humans – literally – put down roots and began to cultivate food plants. This shift occurred at slightly different times, in many different places, and in varied ways throughout the world. All known examples of this transition have one simple fact in common; approximately 10,000 years ago humankind became a global community of botanists and horticulturists. In one way or another, all of us have followed in these early footsteps: we are gardeners, too. Botany is in our genes.

Art historians have identified numerous cave paintings and sculptures that were formed by humans at least 40,000 years ago. The desire to create, to communicate with others through artistic expression, and to understand the world better through art has also been a defining human characteristic for a very long time. It seems we were artists even before we became botanists. Art, too, is in our genes.

Maybe that's why it feels so right when we see art in the Garden. It represents the linkage of two of the most fundamental aspects of being human – cultivation and communication.

As I walk through our Garden, I enjoy the plants because they are unique and beautiful. To me, each one is a living work of art; a life form sculpted by nature.

As I walk through our Garden, I also enjoy the displays of plants, which represent the art form called landscape design. Each Garden display is a living

tapestry – of hardscape, earth, sky, and plants – that designers have created.

As I walk through our Garden, I take pleasure, too, in the presence of art – of objects created by hand that communicate something about the world. Patrick Dougherty's "Childhood Dreams" installation on the Harriet K. Maxwell Desert Wildflower Trail still makes me smile because of its youthful innocence. Mayme Kratz's "Breathing Room" installation last spring always left me with a bittersweet feeling – joy from the beauty of her carefully tended wildflowers coupled with regret that their beauty was fleeting and would last for only a short time.

Soon our Garden will host the work of Dale Chihuly, one of the most successful artists ever to have displayed in gardens throughout the world. His work is informed by nature, his aesthetic is organic, and his fascination with plants and color and light is abundantly apparent in all the art he creates. His installation here will be inspired by the unique attributes of the Sonoran Desert, and I am certain that you will enjoy the result.

I encourage you to visit the Garden often during the six months that Chihuly's work is on display. Come to the Garden to enjoy the plants. Come to the Garden to enjoy the plant displays and galleries, including the exquisite new Ottosen Entry Garden opening November 2008. And come to the Garden to experience the wonderful artwork of Dale Chihuly.

Ken Schutz,
The Dr. William Huizingh
Executive Director

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Fall Plant Sale

Members Preview: October 17, 7 a.m. – 5 p.m.

Open to the Public: October 18, 7 a.m. – 5 p.m.
October 19, 9 a.m. – 5 p.m.

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- Dale Chihuly, *Black Saguars*, 2001. Garfield Park Conservatory, Chicago, Illinois.
Photo: Terry Rishel



CHIHULY: THE NATURE OF GLASS



Clockwise from top: Dale Chihuly: *Flori Sun*, 2007. Phipps Conservatory and Botanical Gardens, Pittsburgh, Pennsylvania. Photo: Terry Rishel. *Blue and Purple Boat*, 2006. New York Botanical Garden, Bronx, New York. Photo: Teresa Nouri Rishel. *Squaro di San Trovaso Chandelier*, 1996. Venice, Italy. Photo: Russell Johnson.

“I am less concerned with being narrative or figurative. I am involved in the glass and the light that passes through it—the phenomenon of light being transmitted through colored glass.”

– Dale Chihuly

Dale Chihuly has been influential within the Studio Glass movement. He continues to revolutionize the art of handblown glass. Working in a generally free-form and unorthodox manner, the results of his approach elicit widespread admiration from the full spectrum of viewers, with one art historian calling his work “liquid light.”

Chihuly’s work is included in more than 200 museum collections worldwide including the Metropolitan Museum of Art, and the Smithsonian American Art Museum. Among the many museums in which his work has been exhibited are the Louvre’s Musée des Arts Décoratifs and the Victoria & Albert Museum, London. Some of the great botanical gardens have recently exhibited his work, such as the Royal Botanic Gardens at Kew, and the New York Botanical Garden. His corporate installations include the famous ceiling sculpture at the Bellagio in Las Vegas.

Born in 1941 and raised in Tacoma, Washington, Chihuly studied interior design and architecture at the University of Washington in Seattle, earning his BA in 1965. In that same year, Chihuly blew his first glass bubble. He attended graduate school on scholarship at the University of Wisconsin, Madison where he studied glass under Harvey Littleton. He finished his graduate studies at the Rhode Island School of Design (RISD), 1968. That same year Chihuly received a Fulbright scholarship to study at the Venini

glass factory in Venice. The following year Chihuly became part of the faculty of RISD and established a glass program there. In 1971 he cofounded the Pilchuck Glass School near Stanwood, Washington.

Through the 1970s Chihuly divided his time between RISD and Pilchuck and developed his team model of blowing glass that he had learned from Venini. During those years Chihuly also developed a core philosophy. “I am less concerned with being narrative or figurative. I am involved in the glass and the light that passes through it—the phenomenon of light being transmitted through colored glass.”

Over the years Chihuly created a wide vocabulary of blown forms. Earlier series from the late 1970s through the 1990s, such as *Baskets*, *Seaforms*, *Ikebana*, *Venetians*, and *Chandeliers* have been augmented with new Fiori—or flower—forms. “Over time I developed the most organic, natural way of working with glass, using the least amount of tools that I could. The glass looks as if it comes from nature.” Some of these new flower forms are reminiscent of his early installations made at Pilchuck in the 1970s, so Chihuly has come full circle with his vocabulary of forms. In his garden installations, the artist juxtaposes his forms with those of nature establishing a direct and immediate dialog between nature, art, and light.

The Desert Botanical Garden is excited to present *Chihuly: The Nature of Glass*, Chihuly’s first installation in an outdoor desert



Dale Chihuly. Photo: Stewart Charles Cohen.

Major Installations

Chihuly Over Venice (1995-96), *Chihuly in the Light of Jerusalem* (2000), *Chihuly in the Park: A Garden of Glass* at Chicago’s Garfield Park Conservatory (2001-2), the *Chihuly Bridge of Glass* in Tacoma (2002), and *Mille Fiori* at the Tacoma Art Museum (2003) and *Chihuly at the de Young*, San Francisco, CA (2008).

Garden Installations

Chicago’s Garfield Park Conservatory (2001), Atlanta Botanical Gardens (2004), Royal Botanic Gardens at Kew (2005), Fairchild Tropical Botanical Garden, Coral Gables, Florida (2006), Missouri Botanical Garden, St. Louis (2006), New York Botanical Garden (2006), and Phipps Conservatory and Botanical Gardens, Pittsburgh, Pennsylvania (2007).

HOW THE GARDEN WILL CHANGE WITH **CHIHULY: THE NATURE OF GLASS**

November 22, 2008 - May 31, 2009

Before the five semi-trailers full of Chihuly glass arrive for assembly, Garden staff and volunteers will have spent months preparing for what promises to be the most incredible exhibition in Garden history. From upgrading the online ticketing system and installing new lighting for the sculptures, to adjusting the fall event schedule and improving our visitor amenities, much has been done to ensure that you will have an extraordinary and memorable experience. Our goal is that each guest will arrive fully prepared to enjoy the exhibition, leave with a desire to return, and tell others about the amazing transformation that took place at the Desert Botanical Garden.

We expect *Chihuly: The Nature of Glass* to be popular, and for that reason we are going to a system of advance reservations and timed entry. All visitors, even members, must have a reservation and must present a photo ID. By requiring every visitor to choose a date and time to visit, we can regulate the flow of guests, ensure adequate parking, and a quality viewing experience for everyone. Timed admissions are something new for Garden members, but not uncommon at other museums that host blockbuster exhibitions. Even if you simply want to visit the Garden and not view the Chihuly exhibition, you will still need a reservation. We're counting on you, our highly valued members and supporters, to help us make the

Chihuly exhibition enjoyable for everyone.

Because of the lengthy installation process, the Garden will abbreviate the Fab Fall series of events. The *Mariposa Monarca* Monarch Butterfly Exhibit (September 27 -- November 2) will remain, along with the Fall Plant Sale (October 17–19), and The Great Pumpkin Festival (October 24–26). Gone from the line-up this year are Native American Recognition Days, Día de los Muertos Celebration, and Chiles & Chocolate.

Our holiday tradition, *Las Noches de las Luminarias*, will take place over nineteen nights. In addition to your favorite musicians, delicious food and 7,000 hand-lit luminarias, guests will also experience the Chihuly exhibition at night. Special night-time lighting will be installed for the exhibition and *Luminaria*. Ticket holders will get a two-for-one special—*Luminaria* and *Chihuly: The Nature of Glass* all for one price!

In February, we will begin a series of Thursday evening happy hours with food, spirits, and live or DJ-spun music, which will run through May. These evenings will be promoted not only to members, but also to the community in the Phoenix metropolitan area.

Spring will bring our annual wildflower bloom, Dinner on the Desert, the Spring Butterfly Exhibit, and the Spring Plant Sale. Timed entry will continue to be required through the close of *Chihuly: The Nature of Glass* on May 31, 2009.

Experience the tradition of *Las Noches de las Luminarias* as never before, with the work of artist Dale Chihuly casting a magical glow upon the Garden's trails.



How to Make Reservations

Beginning Monday, September 15, 2008, members may make reservations (for each visit to the Garden) at no extra cost. Members will still enjoy free admission based on level of membership. Reservations must be made online at dbg.org or by phone at 480-481-8188. A Desert Botanical Garden membership ID number is required. Additional admissions will be available for member guests at the cost of \$12 each.

Non-Members may purchase admissions for *Chihuly: The Nature of Glass* beginning Sunday, October 12, 2008.

Prices for non-members are: Adults \$15, Seniors \$13.50, Students (12-18 and college, with ID) \$7.50, Children (3-12) \$5, Children under 3 admitted free. Admissions may be purchased online at dbg.org or by phone at 480-481-8188.

Garden Members may make reservations one month earlier than the general public, an advantage that will allow scheduled visits before popular days, such as weekends or Friday nights, sell out. Please take advantage of the opportunity to plan ahead to ensure your visit to the Garden.

Presented with major support from:



Sunstate Equipment Co., LLC

Top: Dale Chihuly: *Basket Forest*, 2006. New York Botanical Garden, Bronx, New York. Photo: Terry Rishel. *Neodymium Reeds*, 2007. Phipps Conservatory and Botanical Gardens, Pittsburgh, Pennsylvania. Photo: Teresa Nouri Rishel.

MEMBERS...BE THE FIRST TO ENJOY **CHIHULY: THE NATURE OF GLASS**

Your Desert Botanical Garden membership provides you with unlimited admission to *Chihuly: The Nature of Glass*, which will be installed throughout the Garden.

As a Garden member your support is invaluable, so you will have the first opportunity to make reservations for the Chihuly exhibition. Beginning Monday, September 15, you can make reservations by visiting dbg.org or by calling 480-481-8188. Your member identification number is required in order to make your reservation.

"I expect this exhibit to be extremely popular with members, tourists, and local residents," said Ken Schutz, The Dr. William Huizingh Executive Director. "Our goal is to ensure that you—our members—have the first opportunity to choose preferred visitation dates and times. I encourage you to take advantage of this offer since we expect many days and nights will sell out once admissions are available to the public. To ensure your reservation whenever you wish to attend, I encourage you to make advance reservations for every time that you want to visit the Garden during this popular exhibit."

As a valued member of the Garden, you are encouraged to bring guests to see *Chihuly: The Nature of Glass*. As a new benefit, you may purchase additional admissions at a discounted cost of \$12 each, a savings of \$3. These can be purchased online or by calling 480-481-8188.

Once you arrive at the Garden, please be sure to look for the Membership VIP Check-In window at the admissions area. Garden members will be able to check-in without waiting in a general admissions line. The Membership VIP Check-In window will be open daily, 8 a.m. to 5 p.m. As part of our new procedure, all members will be asked to show a picture ID along with their membership card before gaining free admission into the Garden.

The Garden is hosting a Membership Helpline, 480-941-3517, for members who need assistance making reservations. You should have received a special "Members Only" letter that included the Membership Helpline phone number and more information about your membership benefits.

Member guest passes can be converted to a reservation by bringing the guest passes to admissions or the Garden's Membership VIP Check-in window.

During the Chihuly exhibition, membership guest passes must be presented in person to be converted to reservations. This cannot be done through the Garden's web site or reservation helpline. We will do our best to accommodate your guests with guest passes who accompany members with reservations; however, space may not be available without advance reservations.

If you have questions, please contact the Garden's Membership Helpline at 480-941-3517.

The Garden is hosting a Membership Helpline, 480-941-3517, for members who need assistance making reservations.

Membership Price and Benefit Changes

For a detailed list of membership benefits associated with each level, please visit dbg.org, review page two of your membership renewal letter, or call our Membership InfoLine at 480-481-8117.

Prices at the Aloe Vera Club, Senita Club, and Cholla Club levels have increased. Prices are as follows:

Aloe Vera Club – \$65
Senita Club – \$75
Cholla Club – \$100

Garden members may renew at their existing rate until December 31, 2008. Renew by mail, by calling 480-481-8117, or visit dbg.org. Enter the discount code 1208 on the online renewal form.

Thank you for your membership and for supporting the Desert Botanical Garden's mission.



Opening Night Gala & Preview November 21, 2008

CHIHULY
the nature of glass

Chihuly: The Nature of Glass will be renowned artist Dale Chihuly's first presentation of artwork in an outdoor garden environment. Co-Chairs and longtime Garden Supporters Donald and Barbara Ottosen, along with members of the Gala Committee, will host the Desert Botanical Garden's Grand Opening Gala for the *Chihuly: The Nature of Glass* exhibition on Friday, November 21, 2008. In advance of the public opening, this gala will offer guests an intimate preview of the Garden's most ambitious special exhibition to date. Guests will enjoy festive entertainment and an elegant dining experience in our unique desert garden setting. Ticket prices begin at \$600, with proceeds benefiting the *Tending the Garden* Campaign and The Kresge Challenge.

For more information and advance reservations, contact Danielle Vannatter, Desert Botanical Garden at 480-481-8160 or dvannatter@dbg.org.

Dale Chihuly: *Cobalt Fiori*, 2007. Phipps Conservatory and Botanical Gardens, Pittsburgh, Pennsylvania. Photo: Terry Rishel.

Tending the Garden

RESEARCH PROGRAM GROWS

A generous gift from the Dorrance Family Foundation to the *Tending the Garden* Campaign has allowed the Garden's Research Department to add a new research scientist to its staff. In October, Dr. Shannon Fehlberg joins the Garden as our new Conservation Biologist. When accepting the offer for the position, Dr. Fehlberg exclaimed that it was her "dream come true" to have the opportunity to work as a research scientist at the Garden.

Dr. Fehlberg is no stranger to southwestern deserts. For her doctoral degree from the University of Colorado, Boulder, she studied the evolution, genetics, and biogeography of the brittlebushes (*Encelia* spp.) found throughout the Sonoran and Mojave deserts. Her fieldwork involved collecting plant samples from this region of the U.S. and Mexico. Currently, the focus of her post-doctoral research at Kansas State University is the

genus *Phlox*, including two species found in Arizona. Using a diverse array of modern-day tools for DNA fingerprinting, she is investigating the evolutionary relationships within various plant groups and how factors, including rarity, affect genetic diversity within populations. Understanding the genetics of wild plants is increasingly important for conservation of rare plant populations.

Although the Garden's current research staff already contributes significantly to regional conservation issues, the addition of Dr. Fehlberg brings another dimension to, and strengthens, these efforts and commitment. Furthermore, her expertise in molecular genetics complements the research approaches and methods of Research Botanist Dr. Charles Butterworth in studies of cactus evolution, as well as Assistant Herbarium Curator Dr. Andrew Salywon's molecular genetics

investigations of various plant groups. The collective knowledge of these three scientists will enable research on the molecular genetics of plants to flourish at the Desert Botanical Garden. Dr. Fehlberg's research strengths and shared interests with all departmental staff will contribute to the necessary critical mass that propels a community of researchers to greater accomplishments and contributions.

The *Tending the Garden* Campaign has made it possible to rapidly



Dr. Shannon Fehlberg, Conservation Biologist

by Joe McAuliffe, Ph.D., Director of Research

progress with major initiatives and programs envisioned in the Garden's 2006-2011 strategic plan. This plan is an ambitious and forward-looking blueprint that aims to position the Garden as the premier worldwide center for the exhibition, research, education, and conservation of desert plants and the environments in which they live. Creation of the new conservation biologist position is one of several goals in this plan that will shape and enhance the future of research programs.

In addition to the conservation biologist position, the strategic plan for research at the Garden also calls for the establishment of a second new staff scientist position in plant physiology. Plant physiology includes the study of many different kinds of plant processes, including the uptake and transport of water and nutrients, plant responses to stress, and the many kinds of biochemical reactions that occur in plant cells. Desert plants provide plant physiologists with fascinating subjects of study because of the diverse and often poorly understood ways these plants manage to survive in environments where water is in extremely short supply. The plant physiologist will fill a gap in the Garden's research expertise, contributing to a deeper knowledge about the internal working of plants and benefiting our horticultural and educational programs. As with the new conservation biologist position, funding for the plant physiologist position will be provided by the *Tending the Garden* Campaign. An international search to fill this position is planned for 2009, with a projected January 2010 start date.

Adding these two new scientists significantly enlarges the scope and capacity of the Garden's research program and, as stated earlier, contributes to the critical mass that fosters collaborative and innovative approaches to solving new scientific questions. Once this critical mass is achieved through the addition of the

two new research positions, the Garden will be poised to implement a third major research initiative, also outlined in the 2006-2011 strategic plan and funded by *Tending the Garden*. The Garden will create the International Desert Research Fellowship to provide funding for scientists from other desert countries to come to the United States to work in collaboration with Garden scientists on specific research problems. Likewise, Garden staff will travel to other countries to collaborate on desert research projects. The fellowship will contribute considerably to the Garden's presence and stature within the international community of arid land researchers. This program of international collaboration and exchange in research was initially envisioned in 1994, but its realization first required a firm institutional foundation on which to build the program. That foundation included the construction of the Nina Mason Pulliam Desert Research and Horticulture Center, made possible by the *Growing a Legacy for Generations* Capital Campaign conducted in the late 1990s. The current *Tending the Garden* Campaign will fill these facilities with the creative personnel required for a vibrant research program.

The Garden is indebted to the entire community for making these exciting developments possible. The generous gifts that so many have made to the *Tending the Garden* Campaign help us to realize our collective vision for the pursuit of excellence in the many ways the institution serves the community. I give a special thanks to campaign co-chairs Oonagh Boppart and Hazel Hare, and the entire Campaign Cabinet, for their untiring efforts in leading a very successful fundraising campaign.

We look forward to the arrival of Dr. Shannon Fehlberg in October. In joining the staff, she will become an integral part of the Garden's vision for the future. This vision likewise will contribute to her success in realizing her career goals as a research scientist.

Kresge Challenge Update

Earlier this year, we reported on an exciting Challenge Grant awarded to the Desert Botanical Garden from The Kresge Foundation. **The \$850,000 Challenge Grant is contingent upon our raising the final \$3.8 million needed to complete the *Tending the Garden* Campaign by December 2008.** We are pleased to announce that as of August 1st, over **937 generous supporters have helped the Garden meet 86% of its goal with less than \$550,000 remaining to be raised to complete The Kresge Challenge goal!**

But our work is far from over. This is a time when every gift counts and the Garden is reaching out to its members and community for help. Because the intent of the Kresge Grant is to broaden our base of donors at all levels, gifts of every size are needed. We appreciate the tremendous response we've received and we look forward to meeting the challenge at the end of the year – bringing the *Tending the Garden* Campaign to a successful close.

Tending the Garden is a \$16 million campaign that includes \$10 million for endowment to develop the Garden's financial resources, ensure its physical renewal, and support its pursuit of excellence in all future programs. The Campaign also encompasses renovation of Garden exhibits to dramatize the impact of the living collections, education initiatives for teachers, students and Garden visitors, and funded positions for staff scientists and visiting researchers.

WELCOME NEW GARDEN TRUSTEES

With great pleasure the Garden announces fifteen new trustees; including seven individuals who are new to our Board, three newly elected trustees who previously served via appointment to the board, four long-term trustees who are returning following a year's break from service on the Board, and one newly appointed trustee to the Board. These fifteen trustees bring new and diverse skills, making the Board stronger and more flexible in serving the Garden's needs.



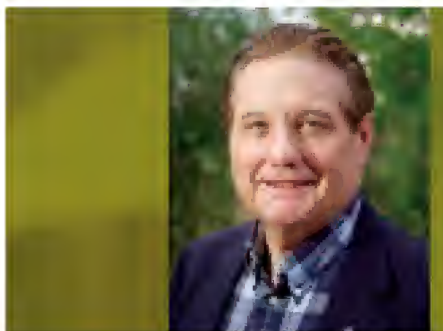
Jennifer Allison-Ray is Lieutenant Governor of the Gila River Indian Community and former member of the Gila River Tribal Council. She holds a Master's Degree in Educational Administration.



Kathryn Baker, CPA, is Vice President and Treasurer of Blue Cross Blue Shield of Arizona (BCBSAZ), responsible for strategic tax planning and compliance, risk management, and the administration of all executive employee benefits.



Gail Bradley is Vice President of Northern Trust, Wealth Strategies Group. Other community and board activities include the Scottsdale Boys and Girls Clubs, the Scottsdale Cultural Council, and Scottsdale Public Art Committee.



Bob Bulla is Immediate Past President and current Regent on the Arizona Board of Regents. He is the former CEO of BCBSAZ, and continues to serve on their Board as well as those of CSA General Insurance Agency and TGen; he is Board Vice President of the Heard Museum.



Shelley Cohn is retired Executive Director of the Arizona Commission on the Arts and served as interim CEO of the Scottsdale Cultural Council. Other affiliations include Alliance for Audience, Childsplay, ASU Hillel, the Jewish Federation of Greater Phoenix, and the Tempe Convention and Visitors Bureau.



Lou Comus, Jr. is an attorney at Fennemore Craig. Mr. Comus has been an on-call Probate Commissioner and Judge for Maricopa County Superior Court as well as a Director and Secretary for the Virginia M. Ullman Foundation.



Hazel Hare has been a Garden volunteer since 1974. She serves on the Boards of Hillsdale College in Michigan and the Arizona Science Center. Ms. Hare is co-chair of the *Tending the Garden* endowment campaign.



Jan Lewis is active in both the Kyrene and Tempe Union High School Districts. She is a Founding Trustee of the T.W. Lewis Foundation, where she and husband, Tom, provide college scholarships and support a wide range of children's and community charities. She is a member of the Campaign Cabinet.



Tammy McLeod is Vice President and Chief Customer Officer for Arizona Public Service Company (APS), and previously served as General Manager of Marketing, Customer Service, and Southern Arizona Operations.



Marta L.

Morando retired from a large law firm in Palo Alto, California where she specialized in corporate and securities law, mergers, IPOs, and intellectual property. She currently serves on the Board of Directors and Audit Committee of ETR Associates.



Peggy Mullan is the CEO of the Beatitudes Campus. She has more than thirty years of experience as a practicing long-term care administrator and serves on many legislative task forces and commissions.



Don Ottosen, owner and president of Ottosen Propeller & Accessories, has been active in developing commercial and industrial real estate. He and his wife, Barbara, created the Ottosen Family Foundation in 1995 and have been major contributors to local institutions, including the Desert Botanical Garden.



Tom Schleifer, Ph.D., construction management consultant, lectures nationally and is the Visiting Eminent Scholar at Del E. Webb School of Construction, Ira A. Fulton School of Engineering, ASU.



Liz Topete-Stonefield, President and CEO of Topete/Stonefield, Inc., is a recognized expert in cross-cultural communications and public relations. She has served actively on more than twenty boards.



Stephen L. Tufts is a Senior Vice President and Regional Manager of Wells Fargo Wealth Management Group for the Metro Phoenix area. He is a Chartered Financial Analyst (CFA) and member of the Phoenix CFA Society.

AT HOME IN YOUR DESERT GARDEN

CREATING AN OASIS IN THE BUTTERFLY PAVILION

A fine mist, lush trees, beautiful plants, and the sound of a faint trickle surround you. A lily pond filled with golden fish invites you to linger. An orange, yellow, and purple flurry of color delights your eyes, as the butterflies welcome the morning sun. It would be easy to imagine that you are in a tropical climate....

But wait, you are in the Sonoran Desert; is it a dream? No, you are in the Marshall Butterfly Pavilion at the Desert Botanical Garden, an oasis in the city, where you are in the midst of viewing and interacting with hundreds of butterflies while you revel in the fragrances and beauty of a lushly planted enclosure. It's all so lovely that it's easy to forget that the Maxine and Jonathan Marshall Butterfly Pavilion is artificially constructed. Have you ever wondered about the logistics and planning needed to create such a unique environment? There is a lot that goes on both before and during each exhibit. Let's take a look behind the scenes.

Limiting Factors

Feeding butterflies in an artificial environment is a challenge, because not all butterflies feed on the same plants. We take care to provide the correct nectar plants—the specific plants that a particular butterfly species needs. Luckily, most butterflies like some of the same plants, such as *Salvia*; most of them also like the Mexican orchid tree (*Bauhinia mexicana*), and the Willow Acacia (*Acacia salicina*), where they can hide and stay cool during warm weather, or stay warm

during the cool early springtime.

In the spring we have a large selection of butterfly species, and thus a larger selection of nectar plants. Their diet is also supplemented with orange slices and fruit juice, something the monarchs have no interest in. For the fall Monarch exhibit we are limited to only a few nectar plants that are not host plants, but we will plant *Lantana*, *Salvia* and *Buddleia* species, among other plants, for this finicky butterfly.

A host plant is the particular plant species that a specific caterpillar will feed on. A butterfly won't lay its eggs on just any plant; it has to be a plant that the newly-hatched caterpillar will be able to eat. The United States Department of Agriculture (USDA), which oversees the regulation of the Marshall Butterfly Pavilion, prohibits the inclusion of host plants because they do not want the butterflies to reproduce. This USDA rule creates a complicated challenge because some plants serve as both host and nectar plants.

One classic example illustrating the problem involves the monarch butterfly. As caterpillars, they eat milkweed leaves (genus *Asclepias*) to absorb the milkweed toxins into their bodies, which then poison their

predators. As butterflies, monarchs drink nectar from many flowers, including milkweed, but since it is also a host plant we are unable to use it.

Many Lists

As you may have suspected, there are lists that correlate butterfly species with their respective host plants, as well as their nectar plants. It is the host plant lists that are most crucial, however, as that is the limiting factor in selecting plants for the pavilion. There are more than 100 pages of host plants that we can't use! We always consult both sets of lists, especially during the spring exhibit, since we never know which of the possible fifty butterfly species we'll have at any given time.

Seasonal Maintenance

Before bringing plants into the pavilion, they must first be cleaned of any pesticide residue. The process is quite simple: plants are sprayed twice with a hose. This important step helps to keep out any chemicals that could harm the butterflies.

While the exhibit is open, organic fertilizer is applied once a week as a bloom booster, helping to ensure a plentiful nectar supply. It also promotes excessive growth of foliage, which is pruned after the season

by Joan Boriqua, Staff Horticulturist

ends. The trees are also pruned during the off-season to keep them from growing through the netting of the enclosure. As flowering plants die out, they are simply removed. Planting for the new season takes place just two weeks prior to opening, ensuring a fresh, lush appearance.

Butterflies will occasionally lay eggs on plants that are not their usual host plants. We are able to quickly spot the eggs or caterpillars and immediately remove them.

Choosing Plants

When developing the plant palette for each exhibit, I think of a theme using five or six color schemes. Last spring the planting theme was “Monet’s Garden,” full of pastels like yellow, purple, pink, and white. The artist’s paintings also prompted the addition of water lilies to the pond. You may recall seeing Prostrate rosemary (*Rosmarinus officinalis*), Greenleaf daisy tree (*Euryops pectinatus*), Fascination vitex (*Vitex trifolia v. purpurea*), (*Salvia coccinea*) ‘Lady in Red’, (*Salvia farinacea*) ‘Victoria Blue’, Globe mallow (*Sphaeralcea ambigua*), Sweet William (*Dianthus barbatus*), and Hero® yellow-French marigolds.

For the *Mariposa Monarca* exhibit of fall 2007, the planting theme was inspired by the vibrant and bold colors of Arizona sunsets. We used three species of Lantana (*Lantana camara* ‘New Gold,’ ‘Radiation,’ and ‘Dallas Red’), six species of Butterfly Bush (*Buddleia davidii* ‘Black Knight,’ ‘Petite Plum,’ ‘Charming,’ ‘Nanho Purple,’ ‘Honeycomb’ and ‘Royal Red’), Woolly Butterfly Bush (*Buddleia marrubifolia*), Salvia ‘Forest fire,’ Sweet William, Yellow dwarf marigolds, and Star flower (*Pentas lanceola*).

Attracting Butterflies

Purple will catch a butterfly’s eye, in addition to yellow, pink, and white, in that subsequent order; mass plantings, rather than a single plant, will create a greater splash of color for them to see. You’ll know which flowers butterflies will prefer by looking at their shapes; flat-topped clusters of blossoms invite

landing, perching comfortably, and offer more than a single sip of nectar.

Use this information to attract butterflies to your backyard and garden. They will make their home in your garden if you plant nectar and host plants. Most of these plants and countless others will be offered at the Fall Plant Sale held on October 17, 18 and 19; and don’t forget to come to the *Mariposa Monarca* Monarch Butterfly Exhibit this fall for more plant ideas and inspiration.



Flowering Plants That Attract Butterflies

Autumn Sage (*Salvia greggii*) is a drought tolerant host plant with beautiful tubular, magenta to red flowers, prefers filtered shade, and blooms in late spring through summer.

Butterfly Mist (*Ageratum corymbosum*) displays glorious fuzzy violet-blue flower heads, is an easy to grow larval plant, takes shade to part sun, is a magnet for the male Queen Butterfly and blooms from mid-summer into fall.

Desert Verbena (*Glandularia gooddingii*) offers stunning lavender flowers that are aesthetically pleasing combined with yellow-flowering native perennials. It blooms its heart out in the spring, forming a small soft mound, but blooms taper off as the temperature rises.

Desert Milkweed (*Asclepias subulata*) is a nectar and host perennial native to the southwest. It is a tough plant that can grow without attention. From spring to fall the butterflies find the creamy white flowers irresistible.

Desert Globemallow (*Sphaeralcea ambigua*) is a nectar and host perennial. This spring bloomer comes in pink, coral, purple, and blue florescence, and has velvet gray-green foliage. It grows quickly to three or four feet tall.



Dates To Remember This Fall

Fall Plant Sale

Members Preview: October 17, 7 a.m. – 5 p.m.

Open to the Public: October 18, 7 a.m. – 5 p.m.

October 19, 9 a.m. – 5 p.m.

Mariposa Monarca Monarch Butterfly Exhibit

September 27 – November 2, 9:30 a.m. – 5 p.m.

garden news

Pat Smith retires after 20 years at the Garden

Pat Smith, Volunteer Programs Manager since 1988, retired May 6, 2008.

Pat's passion for volunteerism was her touchstone, as she nurtured the team approach to volunteer management from its infancy at the Garden to a nationally-recognized model. As a Certified Volunteer Administrator, she provided guidance to our staff, which works with more than 1,000 volunteers.

In addition to her work at the Garden, Pat was a volunteer herself on the Museum Educators Council of Arizona (the education arm of the Museum Association of Arizona (MAA), where she served as co-chair for several years. She served as Vice President of the MAA as well, and in 2002 was elected MAA President. For her outstanding leadership in developing a strategic plan and securing a strong direction for the MAA, she was awarded their Distinguished Service Award in 2007, one of their most prestigious awards.

Pat's quiet leadership, caring heart, and sincere passion for volunteerism will truly be missed. We wish her all the best in her retirement in Bellingham, Washington, where she has moved with her husband, Patrick.



dinner on the desert

Dinner on the Desert 2008

On April 26 the Desert Botanical Garden welcomed 500 guests to a Spanish Colonial setting for this year's Dinner on the Desert. An exotic performance of flamenco guitar and dancing was underway as guests arrived, were greeted, and treated to signature pomegranate cocktails.

Local artists, including Ed Mell and Jim Sudal, were featured in the silent and live auctions, which boasted more than 120 items such as magnificent plant specimens, unique containers, and novel experiences. Dinner was served under the stars on Ullman Terrace.

After dinner and the live auction, guests strolled back to Boppart Courtyard for dessert and dancing. Parting gifts included handcrafted Mexican tile coasters with the Dinner on the Desert logo and individualized silver picture frames with each guest's welcome photo.

Net proceeds from this sold-out event totaled nearly \$400,000, and will support the Garden's mission of advancing excellence in education, research, exhibition, and conservation of desert plants. Dinner on the Desert has been held annually since 1986.

Co-Chairs: Scott Schaefer and Amy Flood, *Caterer:* RK Group, *Décor:* Bouton & Foley Interiors, *Flamenco Performers:* Guitarist Chris Burton Jácome and Dancer Lena Jácome, *After Party Entertainment:* Groove Merchants

SAVE THE DATE:
Dinner on the Desert 2009

April 25, 2009

Co-Chaired by
Rebecca Ailes-Fine
& David Bauer

Coming Soon – Audio Tours!

Venez bientôt - excursions d'acoustique!

Bald kommen - Audios-Ausflüge!

¡El venir pronto - viajes del audio!

すぐに来ること-音声は旅行する!

Beginning November 1, enjoy this lighthearted, fun, and informative new tour format. Listen to great stories and fun facts as you walk along the Desert Discovery Trail. Offered in five languages, as well as in a family presentation in English and Spanish, this tour is another great opportunity to enjoy the sights and sounds of the Garden. Free to Garden Members, \$3 for non-members. The audio tour is made possible by generous gifts to the *Tending the Garden* Campaign by the Dorrance Family Foundation, SRP, and the Virginia G. Piper Charitable Trust.





Golf Tournament Update

Raffle tickets, a gourmet lunch, and a goody bag full of awesome swag! Register today for the *Golfin' in the Desert* Tournament, sponsored by the *Volunteers in the Garden*. The tournament is set to take place on September 20th, 7:30 a.m., at the ASU Karsten Golf Course. Slots are still available but are limited to 120 players. Don't miss out on this fun event! All proceeds go to the Garden's Title I fund, enabling students and their teachers to take part in the popular and informative School Tour program.

Event details and registration forms are available at dbg.org or by calling Amy Walker at 480-220-0305. The cost is only \$125. Send your registration form and check to Shirley Bekey, VIG Treasurer, Desert Botanical Garden, 1201 N. Galvin Parkway, Phoenix, AZ 85008.

CACSS First Annual Best in Show



The Central Arizona Cactus and Succulent Society (CACSS) presented a new award at last spring's show. The Desert Botanical Garden sponsored a trophy, called Garden's Choice Award, for the plant considered Best in Show. Criteria were the same as that for the show in general, with the exception that it was heavily weighted for artistic presentation and staging. Judges Scott McMahon, Curator of

Cacti, Chad Davis, Curator of Agave and Aloe, and ceramics artist Jim Sudal made the choice. The trophy was presented to winners Steve and Julie Plath at the public grand opening of the Sybil B. Harrington Cactus and Succulent Galleries on April 5, 2008, for their award-winning *Fouquieria purpusii*. The trophy will be passed on yearly to each subsequent winner.

Connections: Our colleagues at **Scottsdale Museum of Contemporary Art** host:

Radical Lace & Subversive Knitting

Sept 20, 2008 – Feb 1, 2009

This provocative exhibition looks at the beguiling and unorthodox ways that contemporary artists transform the domestic crafts of knitting and lace making.

In the space of ten years, knitting has emerged from the hobbyist's den into museums and galleries worldwide.

Twenty-seven artists from seven countries showcase this field of creative endeavor, experimenting with forms and techniques in the most novel and surprising ways as they explore new relationships between structure, design, color, and pattern. Works range from microknit-sized garments to large-scale site-specific installations.

This exhibition will be accompanied by a wide array of public programs designed to highlight the importance of domestic craft, and the creative potential therein. SMOCA is the only venue for the tour in the west.

For more information, visit www.smoca.org

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Page 2 Ken Schutz – Adam Rodriguez
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 Page 15 Swallowtail and Monarch butterflies – Adam Rodriguez
 Page 16 Pat Smith – Adam Rodriguez
 Page 16 Audio Tours – Adam Rodriguez
 Page 17 Golf Course – Courtesy of ASU Karsten Golf Course
 Back cover – Luminaria – Adam Rodriguez

in appreciation

The Desert Botanical Garden is grateful to all 18,553 members and donors for their support. Acknowledged in this section are members and donors giving \$2,500 or more annually between, March 16, 2008 – June 15, 2008. Included are memberships and unrestricted gifts to support the Garden's annual operations.

\$25,000.00 +
Jacquie & Bennett Dorrance+
Hazel Hare+
William Huizingh+
Barbara & Donald Ottsen+

\$10,000 - \$24,999
Lee & Mike Cohn+
Jan & Thomas Lewis+
Maxine & Jonathan Marshall+
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+ Patrons Circle members.

SONORAN CIRCLE

The Desert Botanical Garden is honored to acknowledge the following individuals who have included the Garden in their estate plans:

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An invitation outlining all the details of *Luminaria 2008* will be sent to Garden members in early September. Ticket sales begin **September 15.**

DATES

November 28, 29, 30 General Public
December 4, 5, 6, 7 Garden Members and their Guests
December 11, 12, 13, 14 General Public
December 16, 17, 18, 19, 20, 21, 22, 23 General Public

HOURS

5:30 – 9:30 p.m.

TICKET PRICES

Members

Adults \$20
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Purchase Tickets

- Order online at dbg.org
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- Ticket sales only, call 480-481-8188 (9 a.m. – 4 p.m. daily)
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SONORAN QUARTERLY

FOR MEMBERS AND FRIENDS OF THE DESERT BOTANICAL GARDEN

PHOENIX, ARIZONA DECEMBER 2008, VOLUME 62, NO. 4



CONNECTIONS



AS LEADERS OF THE GARDEN, WE NEED TO ANTICIPATE WHAT PHOENIX WILL BE LIKE IN THE NEXT DECADE AND MAKE SURE WE ARE WELL-POSITIONED TO FLOURISH IN THAT NEW ENVIRONMENT.

I believe in planning.

That's why the Garden published a twenty-year Master Plan this year, and why every five years the senior staff creates a five-year operating plan for the Board's approval. Currently, we are in the third year of the plan for 2006-10, and right on schedule for achieving all the goals laid out in it. Chief among these is increasing the Garden's endowment to ten million dollars, and building the new Sybil B. Harrington Cactus & Succulent Galleries and the new Ottosen Entry Garden. To be sure, there's still much work to be done under the current plan, but now is the time to start formulating our new plan for 2011-16.

Members can be certain that the core mission of the Desert Botanical Garden—conservation, education, research, and exhibition—will be front and center in every aspect of that new plan. But the world is changing rapidly and, in many ways, our community is at the epicenter of such change. As leaders of the Garden, we need to anticipate what Phoenix will be like in the next decade and make sure we are well positioned to flourish in that new environment.

I think there are four emerging realities that we need to consider as we plan for the Garden's future, all of which fit together under the umbrella of "connections." Space prohibits a thorough discussion at this time, but in future issues of *The Sonoran Quarterly*, I plan to do just that—in order to keep you informed and to welcome your participation in the planning process. Here is the first installment:

The Garden is a vital part of the Arts and Culture sector in Phoenix.

Gone are the days when Phoenix arts and culture institutions could think of themselves as competitors. In the quest for Phoenix to become a top-tier city, our destinies are linked together and we must collaborate freely to create a world-class arts and culture community. The Garden is at the forefront of this thinking, and will continue to explore unique ways to link to our colleagues around the Valley. One small example is the initiation of a new column in this publication—called *Connections*—where we inform our members about cultural events taking place at other institutions. In the last issue we featured an exhibit at the Scottsdale Museum of Contemporary Art, and in this issue we feature cultural events at the Arizona Museum for Youth. In return, each of these museums featured the Garden's Chihuly exhibit in their own member publications.

It won't be long before 2011 is here. But with the hard work of the Garden's senior managers and Board of Trustees, along with the robust participation of our volunteers and members in the planning process, we will be ready to build on the proud tradition of success that our Garden enjoys and to take the institution to a new level of excellence.

Ken Schutz,
The Dr. William Huizingh
Executive Director

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The Sonoran Quarterly

December 2008, Volume 62, No. 4

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Note: The September 2008 issue was incorrectly labeled. It should have read Volume 62, No.3.



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Top Ten Garden Gifts You Could
Be Giving This Holiday Season

On Our Cover

Ottosen Entry Garden
Photo courtesy of Adam Rodriguez

Dale Chihuly
Chiotro di Sant'Apollonia
Chandelier, 1996
de Young Museum, San Francisco, CA
Photo: Teresa Nouri Rishel

**See this Chandelier
and more at Chihuly:
The Nature of Glass.**

Make your reservations at dbg.org
or 480-481-8188.



Ottosen Entry Garden Awaits You

The Desert Botanical Garden's new grand lobby is completed and ready to delight you. As you approach and pass through admissions, you will be treated to your first glimpse of a unique Arizona desert garden. We are pleased to present a new entrance that truly introduces our world-class collection.

Planning for the Ottosen Entry Garden began almost four years ago, when the Garden began to address visibility and access issues in our entrance and exit areas. We also wanted to enhance the visitor's introductory experience at the Desert Botanical Garden, and to build excitement and anticipation about the outstanding displays of cacti and succulents within.

A dedicated team of staff and volunteers has worked with landscape architect Andy Spurlock and his team to redefine the Desert Botanical Garden experience. They met over several months to develop concepts and work through issues about hardscape, plants, access to the Garden Shop, and visitor amenities like seating, shade, tour gathering, and food services. The team envisioned a landscape that was uniquely Southwest—uniquely Arizona desert. Spurlock presented a beautiful design that was inspired by both the city of Phoenix and iconic Southwest vistas.

Small Gardens Create Moods

Four small gardens lie within the Ottosen Entry Garden, making a strong first impression while creating four moods. Reminiscent of desert sunsets, warm purple, red, and gold hues are woven throughout the entry, terrace, basin, and canal gardens. The grid of the paths in the basin garden was inspired by the grid of Phoenix city streets. In the canal garden, the warm glow of the linear feature suggests the glow of city lights at night. And the stacked rock wall of the canal garden complements the ever-present vistas of the red-rock buttes of Papago Park. The message is clear: step into the Desert Botanical Garden and introduce your senses to the wonder and beauty of the Sonoran Desert.

Each time I walk through the Ottosen Entry Garden, I rediscover plants that once were a backdrop, but have now become stars. You, too, will find new favorite places to stop and appreciate this beautiful landscape. Walk up to the terrace garden and look out over the trees towards the Garden butte. Venture into the basin garden and be immersed among giants. Stroll through the canal garden and be soothed by the cool, smooth, green onyx and the sound of trickling water. It will seem new and yet somehow familiar, all at the same time.

Each time I walk through the Ottosen Entry Garden, I rediscover plants that once were a backdrop, but have now become stars.



by Elaine McGinn, Director of Planning and Exhibits

PROFILE

GARDEN LOVERS COME THROUGH AGAIN

Barbara and Don Ottosen have a long history of enjoying the Garden. Don first visited as a young child with his second grade class. During the past eight years, though, Barbara and Don have become much more involved. In 2000, after many years as Garden members, the couple decided to provide significant support for the *Growing a Legacy for Generations* Campaign. Don joined the Board of Trustees in spring 2007, and together they served as Co-Chairs of the Opening Night Gala for *Chihuly: The Nature of Glass*.

Barbara and Don Ottosen have nurtured the Entry Garden development from its very inception. As Don says, "In 2004, we supported an idea and a vision." Barbara adds, "We wanted to be involved, so we took on the project as if it were our own." As early as several years before the design process was fully underway, the Ottosens generously pledged multi-year gifts. Their commitment was the very first pledge to be recorded to the Garden's campaign, subsequently named "*Tending the Garden*."

At the suggestion of Ken Schutz, Executive Director, and Elaine McGinn, Director of Planning and Exhibits, the Ottosens' first gift in support of the project provided seed funding for engaging the talents of renowned contemporary artist

Barbara and Don are second and third generation Arizonans who are passionate about the beauty of the Sonoran Desert.

Robert Irwin. Irwin introduced the Garden to Landscape Architect Andy Spurlock, who had worked with him on the Getty Museum Garden, in Los Angeles, California. With Irwin's blessing, the Garden eventually turned to Spurlock and his firm, Spurlock Poirier, to proceed with a new design. The Ottosens enthusiastically supported the decision, and worked closely with the Garden's planning team in considering alternative designs and in making the final selection from those proposed by Spurlock Poirier.

A New First Impression

The Ottosens believe that the Desert Botanical Garden is truly becoming a premier garden, and they hope the new entry experience will give visitors a wonderful first impression of a world-class garden. Building upon the design features and structures created in 2001, the new design

will make it easier for visitors to navigate the Garden. In addition, the Ottosens love the following new features:

- Opened vistas to the Papago Park buttes
- Massed plantings and use of color
- Order, organization, and elevation changes of the displays
- Connection between the Valley geography and the Garden's new design.

True to the Desert

Perhaps the Ottosens' ultimate compliment to the design team is an assertion that the new Garden is "true to the desert."

Barbara and Don are second and third generation Arizonans who are passionate about the beauty of the Sonoran Desert. Their home is located near the Phoenix Mountain Preserve, where they spend many hours hiking and enjoying what nature has to offer here at home. They particularly appreciate the seasonal changes in desert plants, and they find similar joys in visiting the Desert Botanical Garden. As Barbara says, "there's always something new to appreciate."

by Beverly Duzik, Director of Development



Barbara and Don Ottosen

A Tribute to Two Special Leaders

When asked to determine wording for the Ottosen Entry Garden plaque, Barbara and Don decided to honor two tremendous leaders who have dedicated themselves to helping fulfill the Garden's mission. Barbara says, "What they have accomplished is phenomenal. Names come and go, but we wanted to ensure that Oonagh Boppert and Hazel Hare are always remembered."

With that thought in mind, at the November 6 opening ceremony for Ottosen Entry Garden, Barbara and Don surprised the *Tending the Garden* Campaign Co-Chairs with this special dedication:

OTTOSEN ENTRY GARDEN

A gift from Barbara and Don Ottosen

Dedicated to
Oonagh Boppert and Hazel Hare
In honor of their passion for the Garden
and tireless service to the institution

November 6, 2008

It is not surprising that the Ottosen's tribute to Oonagh Boppert and Hazel Hare is as generous as was their support in the creation of this new entrance for the Desert Botanical Garden.

THE ARIZONA REPUBLIC *presents*

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CHIHULY

the nature of glass

NOVEMBER 22, 2008 - MAY 31, 2009

Chihuly: The Nature of Glass has arrived at the Desert Botanical Garden. Make your reservation today by visiting dbg.org or by calling 480-481-8188.

Dale Chihuly, *Flori Sun*, 2007, 87" x 148" x 148", Phipps Conservatory and Botanical Gardens, Pittsburgh, Pennsylvania. Photographer: Terry Rishel



THURSDAYS AT DBG

Spiked! presents Chihuly Nights

Mix, mingle, and marvel at the Desert Botanical Garden's new Thursday night social event. Each evening showcases a different Chihuly sculpture in one of our unique venues, paired with a Chihuly-inspired creative cocktail.

Thursday Nights / 5:30-8 p.m. / \$25
February 26, March 5, 12, 19, April 2, 9, 16, 30, May 7, 14

Contact dbg.org or call 480-481-8188 for more information.



CHARLIE'S TRIP TO BRAZIL

Report On IOS Congress and Post-congress Field Trip, Brazil 2008

The International Organization for Succulent Plant Study (IOS) surprised me in October 2007 with an invitation to give a presentation in a symposium entitled “Taxonomy, Evolution, and Systematics of Cactaceae.” I had never previously been invited to do such a thing, but there it was. The IOS holds congresses biennially; the next was scheduled in conjunction with the Cactus and Succulent Society of Latin America and the Caribbean as part of the 2008 Brazilian Botanical Congress.

Established in 1950, and for a time exclusively European, the original membership of the IOS read like a “Who’s Who” of the cactus world with such prestigious names as Buxbaum, Krainz, and Werdermann. A fundamental aim of the IOS was (and still is) to “promote the study and conservation of succulent and allied plants and to encourage international cooperation amongst those interested in them.” By 1955, membership had grown and included other prominent botanists such as Bravo Hollis (Mexico), and former Desert Botanical Garden director George Lindsay. Today, membership of the IOS

spans the globe with an impressive list of cactophiles and succulentophiles, including professional researchers and interested amateurs alike. Desert Botanical Garden has a strong relationship with the IOS going back to 1992, when the IOS, under President Ted Anderson, held its twenty-second congress at the Garden. The Garden again hosted the IOS congress in 2002.

The 2008 Brazilian Botanical Congress was held in Natal, which is located about as far east as one can go in Brazil without getting one’s feet wet in the Atlantic Ocean. It is a vibrant city of over one million people, most of who appeared to be driving the busy streets at the same time. The city is a popular destination for both Brazilian and foreign tourists, who are drawn to the area for the long, sandy beaches and large, stable sand dunes.

So, travel to Brazil in August? As a native Brit, I would have felt daunted by the idea of tropical heat. However, as an inhabitant of Arizona, I felt differently—I would be visiting during Brazil’s winter. I Googled “climate in Natal, Brazil” and learned that August was the wet season

by Dr. Charlie Butterworth, Research Scientist



Left to Right: *Melocactus pachyacanthus* with Charlie. Each plant has a cephalium with dramatic red/bronze bristles. Small pink flowers are produced from the cephalium. Columnar Cacti group shot. The dense scrub of the caatinga means that columnar cacti are very successful as they can grow through the dense brush. These plants are (from L-R) *Pilosocereus glaucochrous*, *P. pachycladus*, and *P. catingicola*.

with daytime temperatures around 85 degrees Fahrenheit. Given the perniciously high temperatures of the Phoenix summer, I thought it would be a wonderful change. How wrong I was! Obviously, since it was the wet season, relative humidity was high. As a result, even in the relatively cool temperatures of Natal, there was not a sheet of blotting paper large enough to prevent me from looking as if I had just received a dunking—fully clothed!

The IOS symposium boasted an impressive list of speakers including Salvador Arias (Mexico), Erika Edwards (U.S.A.), Reto Nyffeler (Switzerland), and Marlon Machado (Brazil). I had previously met only two of the speakers. Salvador and I met in 1999 at a cactus and succulent congress in Oaxaca, Mexico, while Erika and I met during the 2006 U.S. Botanical Congress. We had worked independently on *Pereskia* (she at Yale, I at Iowa State University). When we learned of each other's research, we both had manuscripts ready for publication. I submitted mine to the journal with the greatest backlog, with the result that Erika's paper was published four

months before mine. Erika is now at Brown University; we have recently joined our *Pereskia* DNA datasets together in a collaborative study due to be published this year. As for the other presenters, I found them all as approachable and amiable as Salvador and Erika, such that discussions regarding cactus research often extended to lunch and dinner times.

My presentation at the congress introduced my ongoing deep interest in evolutionary relationships in the tribe Cacteae (North American barrel cacti), which had been part of my Ph.D. dissertation research. What I find particularly interesting about the Cacteae is that, while traditional classifications are fairly accurate, a number of groups throw us a curve ball when we look at their DNA sequences. Explaining how and why this happens is my biggest research goal. Luckily I have a collaborator in this research: Mark Porter of Rancho Santa Ana Botanic Garden, California, and I have built up a large DNA dataset. It is not complete, but we keep adding to it. I added Mark's name as a collaborator, and presented our



Cereus jamacaru in a garden in Morro Do Chapeu. This is a huge specimen of this species. The owner recounts that her grandfather remembered it being big in his childhood. It is possible that this plant is 200 years old.

Established in 1950, and for a time exclusively European, the original membership of the IOS read like a “Who’s Who” of the cactus world with such prestigious names as Buxbaum, Krainz, and Werdermann.

latest data and thoughts about evolution of the Cactaceae.

The IOS congress lasted four days, but I stayed longer to participate in the IOS post-congress field trip. Having opportunities to see cacti in habitat is not only a great learning experience, it’s also fun. We were going to be under the guidance of Bahia native and cactus expert Marlon Machado, who had just completed Ph.D. research in Switzerland and was taking time out of his dissertation writing schedule to lead the field trip.

After an early morning flight from Natal to Salvador De Bahia, we boarded a minibus and headed some 300 miles northwest towards Morro Do Chapeu. First we drove through lush farmland with large fields of sugarcane and cattle; we saw only remnants of Atlantic Rain Forest clinging onto the steep slopes and crowns of hills. Beyond the city of Feira De Salvador, the climate became drier and we began to see cacti—large specimens of the columnar *Cereus jamacaru*.

Located at around 3,000 feet elevation in the Chapada Diamantina (an area of low mountains famed for its diamonds), Morro Do Chapeu has an equable climate with around thirty inches of rain annually. The region’s vegetation is characterized as *caatinga*—an ecoregion consisting of xeric shrubland and thorn forest. During the week of our field trip,

I became thoroughly acquainted with the thorny nature of this vegetation. I was glad that I had robust clothing, although I did suffer from a serious wardrobe malfunction—much to my dismay—on our first full day, when my left boot’s upper decided to part company, catastrophically, with its sole.

In an area of dense scrub, tall columnar cacti are able to push their way through the canopy into the open air above. This meant that we saw many columnar cacti species such as *Pilosocereus pachycladus*, *P. catingicola*, and *Stephanocereus luetzelbergii*. However, some species do not even attempt to broach the thorny vegetation, preferring to remain fairly small. For me, seeing these plants was particularly exciting as many belonged to the genus *Melocactus*, which is renowned for possessing a stunning cephalium (distinct flowering zone that is morphologically very different from the rest of the plant). In all, we saw eleven species of *Melocactus* including the commonly cultivated *M. ernestii*, *M. concinus*, and *M. glaucescens*.

While we saw many fine locations in relatively close proximity to Morro Do Chapeu, we had a couple of longer drives to other special localities. One of these trips was to the type locality (the site of the original botanical collection for a species) of *Melocactus azureus*. This species was first collected in 1968 by Horst and Buining from just west of the small town of Jucara. The original publication does not describe much about the type locality other than its being along the Rio Jucaré. Today, it seems that Jucara is growing in a westerly direction and the type locality is now an area strewn with trash. However, even

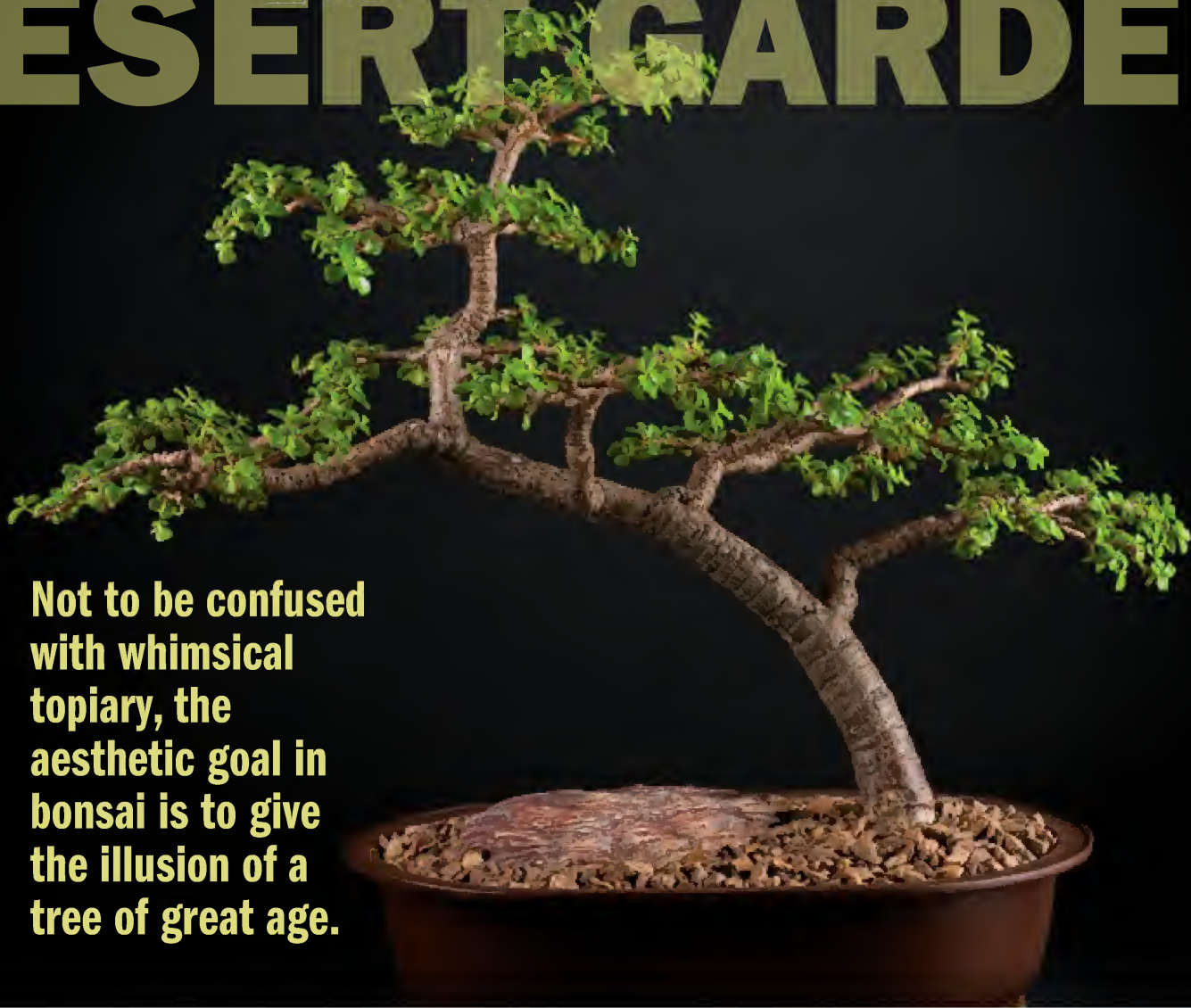
among the slowly degrading plastic bags, *Melocactus azureus* is alive and well. In fact, it is very abundant in this area and easily visible peeping above the flotsam of modern life. Of course, should Jucara continue its westward expansion, the type locality of this species will be lost forever.

The area around Morro Do Chapeu is also famed for its large cave systems, which are popular with spelunkers. The entrance to one of these, the Gruta De Brejões, is a huge yawning tear in a canyon wall. The dimensions are formidable—350 feet in height by around 150 feet wide. It is quite easy to walk into the interior of this chasm without need of artificial light. There is also another species of *Melocactus* found in this region. *Melocactus pachyacanthus* ssp. *pachyacanthus* can be found growing in abundance in small clearings in beautiful caatinga forest. Its habitat is quite peaceful and scenic, but dangerous! The species name *pachyacanthus* means “thick-spine” and, indeed, this cactus is furnished with some of the fiercest spines I have seen. While not as large as spines in some of the ferocacti, the spine clusters of *M. pachyacanthus* are incredibly robust. They litter the forest floor, with a propensity to point their thickest central spine skyward as if in a determined effort to spear the feet of hapless botanists.

All in all, my trip to Brazil was as eye-opening as it was academically enriching. The congress allowed me to mingle with fellow botanists, while the field trip broadened my knowledge of the natural history of another country’s ecological region while in very good company. I am extremely grateful to the IOS for inviting me to Brazil, and am very thankful to the Garden for funding my trip.

AT HOME IN YOUR DESERT GARDEN

MINIATURE DESERT “TREES”



Not to be confused with whimsical topiary, the aesthetic goal in bonsai is to give the illusion of a tree of great age.

Elephant food (*Portulacaria afra*) in the “slant” style. This is a great species for beginners. It can take full sun and lends itself to many bonsai styles, but needs protection from frost.

In my work at the Garden as a volunteer docent and horticulture aide, I had long admired with envy the dozens of different species of desert trees from throughout the world. I say “with envy” because of the small backyard at our Moon Valley patio home in north Phoenix. With the 45-foot-wide canopy of a 15-year-old Argentine mesquite

shading two-thirds of the yard, there was little space for other trees. How could I possibly grow some of these desert species in our yard?

When I stumbled upon a bonsai demonstration at Baker’s Nursery in Phoenix one morning in 2005, I knew I had found the solution and soon joined the two bonsai societies in town. After promptly killing my

first two non-native juniper trees in the hot sun, I then switched to desert-adapted species. I now enjoy growing about two dozen species of trees, including elephant tree, palo brea, ironwood, velvet mesquite, Texas ebony, and Sonoran rock figs with their exposed roots flowing over miniature boulders. Several shrubs are also beginning to take

by Tom Gatz, Garden Docent and Horticulture Aide



Just about any plant with a woody stem can be grown as a bonsai, but the most realistic ones have small leaves or needles and thick, gnarled trunks.

on interesting miniature tree forms in some of my pots, such as elephant food, *Euphorbia misera*, cascalote, Barbados cherry, bougainvillea, creosote, emu bush, and Texas Ranger.

Frowned on with concern by some plant-lovers harboring suspicions of plants being tortured in tiny pots, one tree book author even unfavorably compared the occasional root pruning of bonsai trees (which actually makes room for more soil in the pot) to the cruel and archaic practice of foot binding. In fact, few plants get as much care and attention as do these valued specimens pampered by bonsai enthusiasts. With proper care, your bonsai tree may well outlive you. One specimen at the U.S. National Arboretum in Washington, D.C. is reputed to be more than 380 years old!

Not to be confused with whimsical topiary, the aesthetic goal in bonsai is to give the illusion of a tree of great age. The look is slowly achieved by developing a thick, weathered trunk, and encouraging downward slanting branches and branch ramification by means of strategic clipping or temporary wiring. Sensei Leroy Fujii recommended leaving spaces in the tree for imaginary tiny birds to fly between the branches.

Just about any plant with a woody stem can be grown as a bonsai, but the most realistic ones have small leaves or needles and thick, gnarled trunks. Avoid the bonsai plants for sale at the big box stores; they are often not suited for our climate and most bonsai trees need to be grown outdoors. Potential places to find specimens with character are in the

discount area of some nurseries and (with permission of course) from the yards of old, established neighborhoods that are undergoing renovation. When salvaging a large plant from the landscape, save as many roots as you can and quickly transplant it to a very large pot or plastic storage tub with drainage holes added. Then gradually reduce the pot size and root mass each year. Keep it watered and well fed; even desert plants need extra care when confined to pots.

Try to start with the thickest trunk you can find. I have seen some olive trees and bougainvilleas with trunks a foot or more in diameter successfully converted to bonsai masterpieces. Don't be in a hurry to put your plant into a bonsai pot. Smaller, one-gallon specimens often spend four or five years growing in the ground or in deeper three- to five-gallon training pots, where they more quickly develop the desired bonsai style and trunk thickness. Be sure to place a flat rock or tile a few inches under the soil to encourage roots to initially grow laterally. That way it will more readily fit into a smaller bonsai pot when it begins to look more like the miniature tree you envisioned.

Much of the knowledge about well-draining soil mixes and repotting techniques that I have gained at the Desert Botanical Garden has helped me in caring for my bonsai trees. Conversely, the knowledge gained from the bonsai clubs has given me new perspectives on pruning and shaping not only my bonsai trees but also my full-sized trees. The big mesquite in

our backyard is acquiring a windswept style—artistic, but also practical to better deal with the monsoon winds.

Many bonsai enthusiasts struggle (sometimes successfully) to keep pines and maple trees alive here in the desert. I'm not that skilled, so I stick with the desert plants that thrive here. The elephant tree (*Bursera microphylla*), native to Arizona and Mexico, is a great bonsai candidate and one of my favorites. Specimens often take on natural bonsai form as they cling to desert hillsides and get pruned by browsing animals and frost. They are usually available at the Garden plant sales if you get there early.

Some succulent plants can also be displayed as bonsai. Although not considered a true woody tree by bonsai purists, I think a great starter species is the succulent plant called elephant food (*Portulacaria afra*). It's a tough little plant that thrives in full sun with minimal water. Its only Achilles' heel is cold weather. Be sure to bring yours inside if the temperature is predicted to drop below freezing. A new book entitled *Bonsai Succulents* (2007) by Philippe de Vosjoli and Rudy Lime is loaded with intriguing photos and can be found in the Garden library (open weekdays 12-4 p.m.). If you would like to learn more about this ancient living art, contact the local clubs listed below. Your success, like mine, will improve dramatically under the gentle guidance of club mentors.

Phoenix Bonsai Society,
www.phoenixbonsai.com or Scottsdale
Bonsai Society, fairlee1@cox.net.

Opposite page, top left: The roots of this Sonoran rock fig, *Ficus petiolaris*, (formerly *F. palmeri*) were wrapped around a rock and buried for several years before the plant was elevated to display it in the "root over rock" style. *Top right:* Like a tree growing over a cliff edge, this elephant food, *Portulacaria afra*, is styled in the "semi-cascade" bonsai form, with a haworthia serving as an accent plant. *Bottom left:* Elephant tree, *Bursera microphylla*, seedlings were used to create a miniature "forest" scene. Smaller trees were placed in the back to give the illusion of distance. The petroglyph rock art was created by local artist David Morris. *Bottom right:* So that the pot does not compete with the tree, glazed colored pots are normally used only with bonsai plants that flower, such as this bougainvillea. A tiny elephant food "tree" is used as an accent.

WHAT A DIFFERENCE TWENTY YEARS HAS MADE

Whispering leaves rustle overhead as the sun rises in all its orange golden glory, washing the boughs in hues of yellow bronze. What a sight! Sipping my coffee, I welcome in the morning under the cottonwoods, (*Populus fremontii*) of the *Plants and People of the Sonoran Desert Trail* (PPSD). I have always loved these cottonwood trees—like silent sentries they seem to me, towering over the pond while guarding the Native Crop Garden, where the story of the crops of yesterday is still told.

These riparian trees are so large, so perfectly planted, that I just assumed that they had always been there. It made sense to me because of the canal east of the Garden, which I thought could be a modern version of an older, unpaved irrigation channel. Then one day, while rummaging in the dried leaves at the foot of the trees, I was surprised to discover an accession tag. Running the serial number revealed that the cottonwood trees were planted in 1986, before the trail was first opened on March 20, 1988—just over twenty years ago.

The PPSD Trail has come a long way in that time. While sifting through back issues of the *Saguaroland Bulletin* (available in the Garden library), I discovered a picture of the riparian area dated 1987. With the exception of the cattails, the photo shows no vegetation, and the eastern boundary fence of the Garden can clearly be seen. Today, looking at the same area in front of the pond, the fence and canal are totally obscured by seep willow (*Baccharis salicifolia*), quail bush (*Atriplex lentiformis*), arrow weed (*Pluchea purpurascens*



Young cottonwood saplings, 1988

var. *purpurascens*), canyon ragweed (*Ambrosia ambrosioides*), sacred datura (*Datura wrightii*), mesquite (*Prosopis velutina*), and cottonwood.

In the 1987 photo, there is little trace of the now tall cottonwoods because at that time they were only 15-gallon trees. Not until years after the trail first opened did the riparian area grow to resemble what is found there today.

Over time, other echoes of the past have made their way to my cubicle in Horticulture. Upon coming in from dredging algae out of the pond one morning, I discovered a curious

package sitting on my chair. Within, I found two bags of slides from 1994 that showed the different gardens and bosque on PPSD. Of all the frames, it was the photos of the Grassland area that were the most striking.

In 1994, the Grassland section of the trail was little more than bare dirt, one bear grass clump, and two yuccas, looking for all the world like a forlorn abandoned lot. Planting for the Grassland began back in 1987, and eight years later the grasses had still

not established themselves. Walking through this section of the trail now, you find yourself surrounded by a sea of rolling green so unlike anything else in the Phoenix basin that you could fancy yourself in another time. Year after careful year the horticulturists before me laid down mulch and seeds to give rise to the waves of grass on the trail today.

The importance of these two areas—the riparian area and the grasslands—cannot be overstated. Once upon a time, the banks of the Salt River were lined with forests of cottonwoods. Now, driving over the concrete bridge on Hayden Road,

by Ray Leimkuehler, PPSD Trail Gardener



PPSD grassland area, 1994.



After 15 years, the PPSD grassland area has become a lush desert oasis.

the once-vibrant Salt River looks like little more than a gravel bar. There was a time, too, when some parts of southern Arizona boasted of lush grasslands where the seed heads were said to brush the stirrups of the first cattle ranchers to roam the territory. Today, many of these fragile ecosystems have been altered beyond the memory of what the land had once been, giving rise to an increase in prickly pear, yucca, and turpentine bush. No longer can the people of the valley see what ungrazed grasslands look like, save for perhaps two places that I am aware of. One is Dutchwoman's Butte north of Roosevelt Reservoir—a laborious, steep trek, but worth it. The other is on our *Plants and People of the Sonoran Desert Trail*.

Like a field carefully sown long before the far-off harvest, the trail has taken time to reach the beauty now seen around every bend. But, while that is true, it would be false to assume that the trail has been idle while awaiting the plants to reach their maturity. Far from it.

The PPSD Trail has undergone many changes since 1988. The Apache Household, for instance, was relocated west of the chaparral area. Certain portions of the path have been altered or removed altogether, like the former lookout point onto the Agave Terrace. Change has been ongoing—conceived by many minds, and carried out by many hands.

Our latest improvements to the trail began in 2005 when the Garden received funding for a planning grant from the Institute of Museum and Library Services. It launched a two-year project to refine existing themes and identify needed exhibit and interpretive enhancements, which would broaden the visitors' understanding and appreciation of the Sonoran Desert's history and ecology. New bilingual signage featuring cultural themes and biodiversity were developed as part of the planning grant, and proceeds from *Las Noches de las Luminarias* 2001 allowed us to fabricate and install the new signs. Led by the Exhibits Department, members of every department within the Garden played a role in the completion of this project.

Particularly noticeable are the improvements made in the chaparral area. More than 150 new plants were added, including fourteen species not previously represented. Some of these include golden flowered agave (*Agave chrysantha*), Tonto Basin agave (*Agave delamateri*), red barberry (*Berberis haematocarpa*), turpentine broom (*Thamnosma Montana*), and Arizona cypress (*Cupressus arizonica*).

Comparing the 1987 photographs of PPSD with what is found now really impressed upon me the patient vision required to bring an enduring collection and exhibit to maturity. The planners, horticulturists, educators, Native

American consultants and ethnobotanists knew it would take years for the trail to come of age, yet they diligently pursued the far-off dream. Their many contributions have produced excellent results—a beautiful place to experience the living history of the desert.

As part of our mission to disseminate knowledge to the public, we introduce thousands of schoolchildren to Sonoran Desert biodiversity—children who might otherwise not experience the natural world that exists beyond the pavement. PPSD allows us to work with native peoples to communicate information about their cultures' traditions and plant lore. The Akimel O'odham Household provides visitors a fascinating glimpse into the past. Hands-on exhibits at the Agave Roasting Pit and Saguaro Harvesting Ramada help visitors and students learn the uses of native desert plants.

Leaving the cottonwoods behind as I begin my work, I realize that the two decades of growth and maturity really add a special quality to this section of the Garden that cannot be achieved in any other way. Twenty years from now, when my four-year-old nephew is much older, I hope to be able to bring him to the Garden to see the cottonwood, grassland, and chaparral areas standing as they have since 1988. With hard work, care, and patience, there is no reason why I couldn't.



Hazel Hare and Oonagh Boppart



Carol Schilling



Lee and Mike Cohn

Garden Leaders Receive Community Awards

The Association of Fundraising Professionals (AFP) Greater Arizona Chapter honored Desert Botanical Garden leaders Oonagh Boppart and Hazel Hare with the Outstanding Fundraiser Award at the Philanthropy Awards Dinner held November 12, 2008. They shared the spotlight with Carol Schilling, long-time Garden supporter and former editor of *The Sonoran Quarterly*, who also received the Outstanding Philanthropist Award. These dynamic women have become models of excellence and commitment

for philanthropy in Arizona. Their dedication, energy, enthusiasm, and generosity inspire donors, volunteers, and professional fundraisers alike.

The Garden honored Lee and Mike Cohn with its Spirit of Philanthropy Award. Lee is an extremely active, long-time Garden Trustee who has contributed time and talent to the organization for many years. She and her husband, Mike, have made many thoughtful and generous gifts to the Garden.

Connections: Our colleagues at Arizona Museum for Youth host: Full Circle: Recycled into Art

Oct. 3, 2008 – Feb. 8, 2009

Who says junk is worthless? It's all the rage! The newest exhibit at Arizona Museum for Youth makes the chic notion, *trash to treasure*, trendy again.

In this innovative exhibition, artists engage their craft by transforming discarded items and junk into objects that have beauty, meaning, and form. Ingenious ideas are applied by recycling broken toys into human sculptures, discarded street signs into chairs, and old watches into faithful watch dogs.

One of the featured artists, David Adix, says of his work, "I regard these components as fossil-like evidence of what humans leave behind. To me, they are beautiful vestiges of time. In the detritus (human sculptures), there is energy and a history already infused within them revealing form and the internal-external workings of a native figure with new meaning, life, and a memory of its own."

Fifteen other ingenious artists are featured in this exhibit at Arizona Museum for Youth.

For more information visit www.arizonamuseumforyouth.com

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Cover photo	Ottosen Entry Garden/ - Adam Rodriguez
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Page 14	Cottonwood area, 1988 - Steve Priebe Mature cottonwood trees - Brandi Eide
Page 15	Grasslands (left) - Michael P. Gardner Grasslands (right) - Adam Rodriguez
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Pages 18-19	Cactus blooms - Adam Rodriguez

Lions, Elephants, and Gorillas—Oh My!

Garden Director Ken Schutz will lead a photographic safari to Kenya next summer, with an optional extension to Rwanda to see Mountain Gorillas.

This will be Ken's tenth trip to East Africa, but he never tires of sharing his love for that part of the world with others. His view of nature is holistic, embracing both the animal and plant kingdoms, and he has selected Kenyan safari guides who have the same perspective. They will teach us the natural history of both the plants and animals of East Africa.

The safari itinerary includes Amboseli National Park, Lake Nakuru, Meru National Park, and Maasi Mara (the Kenyan portion of the Serengeti ecosystem). Each of these wildlife parks supports an abundant array of exotic African wildlife, including elephants, giraffes, hippos, antelope, and all the big cats. The variety and beauty of birdlife that can be seen at each park is also astounding. The safari is scheduled so as to maximize the chance of seeing the great wildebeest migration in Maasi Mara.

All accommodations in Kenya are luxury tented camps, with full amenities. Most travel between camps is by plane. Inside the wildlife parks all transportation is by 4-wheel drive vehicle. The safari experience is very relaxing, and not at all strenuous.

Ken will also lead a four-day extension into Rwanda to see Mountain Gorillas. This is a trip he has made only once before; now that civil order has been fully restored to Rwandan society, he is anxious to see the gorillas again. The Rwanda extension can be strenuous, as some hiking through mountainous tropical forest habitat is required. Also, the accommodations in Rwanda are far more rustic than those in Kenya. But the reward of viewing a wild gorilla troop at close range is well worth the effort for those willing to make the trip.

All participants must be Desert Botanical Garden members. A tax deductible \$500 contribution is included in the registration fee for each person participating.

Safari Dates:

August 27-September 8, 2009

Cost: \$8,498

Single supplement additional

Rwanda Extension dates:

September 8-12

Cost: \$3,998

Single supplement additional

*Airfare to and from Nairobi not included in the prices above.
For more information, please contact Marie Gant at 480-481-8119
or email mgant@dbg.org.*





CHARITABLE GIFT ANNUITY

A Simple Year-End Giving Option – Plus Income for Life

As the year-end approaches, when discretionary income is stretched with entertaining and gift-giving, a charitable gift annuity may be an appealing option to consider.

A Charitable Gift Annuity (CGA) is a simple contract between you and the Desert Botanical Garden.

- It is created with an irrevocable gift of cash or securities (Think about utilizing highly-appreciated assets or cash from a required IRA distribution.)
- It provides income for life at a fixed payout rate
- Or it can defer the income to a future retirement date
- It provides a way to enjoy a partial bypass of capital gains taxes
- It secures an immediate income tax deduction (for the portion that represents the charitable gift)
- BEST OF ALL—it provides for the future of the Desert Botanical Garden

Essentially, the Charitable Gift Annuity has two parts:

- 1) the purchased annuity that will provide income (some of it tax-free) to you for life, and
- 2) the charitable gift that will eventually “**Plant the Garden’s Future.**”

In exchange for a gift investment of \$10,000 or more, the Desert Botanical Garden would agree to make annuity payments to one or two annuitant(s) for life. Payments

are based upon the age of the donor(s)—the older you are, the higher the interest rate. No matter what happens, the annuitant receives a fixed percentage annually for as long as the annuitant lives.

The Garden has an obligation to make income payments regardless of what happens to the assets constituting the original gift. The gift is backed by the assets of the Garden and is not dependent upon investment return, so there is very limited risk for the donor.

For a younger donor looking for a way to fulfill charitable pledges and secure retirement income, a deferred gift annuity produces an income tax deduction today, and later, upon the donor’s retirement, regular payments back to the donor will begin at a rate determined by the donor’s retirement age.

A Charitable Gift Annuity is a quick solution to year-end charitable giving. It does not require an attorney to set up a trust. All you will need is a simple contract executed with the Garden. *(We encourage you to speak with your tax advisor to fully understand your own individual tax implications.)*

Your generosity will benefit both you and the Garden! Visit the Garden’s website at dbg.org (click on Support the Garden, then Planned Giving) to investigate Gift Annuity rates by age. You will also find stories about donors and tools for comparing charitable giving options. Contact Susan Shattuck, Gift Planning Officer at sshattuck@dbg.org, or 480-941-3507 for more information or assistance.

in appreciation

The Desert Botanical Garden is grateful to all 17,287 members and donors for their support. Acknowledged in this section are members and donors giving \$2,500 or more over the quarter, from June 16 - September 15, 2008. Included are memberships and unrestricted gifts to support the Garden's annual operations.

\$25,000.00 +

Jacquie & Bennett Dorrance+
Hazel Hare+
William Huizinga+
Barbara & Donald Ottosen+

\$10,000 - \$24,999

Lee & Mike Cohn+
Jan & Thomas Lewis+
Maxine & Jonathan Marshall+
Louise C. Solheim+

\$5,000 - \$9,999

Connie & James Binns+
Robert Bulla+
Marilyn & Cliff Douglas+
Ardie & Stephen Evans+
Faye & James Kitchel+
Marta Morando & William Moio+
Nancy Swanson+
Connie & Craig Weatherup+

\$2,500 - \$4,999

Susan & Bryan Albue+
Joy & Howard Berlin+
Oonagh & John Boppert+
Karen & William Clements+
Julie & H. J. Louis+
Lynne & L. Richards
McMillan, II+
Irene & E. David Metz+
Rosellen & Harry Papp+
Kenneth J. Schutz+
Betty Lou Summers+
Shoshana & Robert Tancer+
Carol Whiteman+
Barbara & Charles Young+

+ Patrons Circle members.

SONORAN CIRCLE

The Desert Botanical Garden is honored to acknowledge the following individuals who have included the Garden in their estate plans:

Anonymous (33)
Rebecca Ailes-Fine & Peter Fine
Gail & John Allan
Sidney Allen
Mary Jo & Gene Almendinger
Lou Ella Archer*
Billie Jane Baguley
Judy & Web Baker
Kathryn Baker
Kate & Greg Bakkum
Valerie Banks
Diane Barker
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Nancy & Terry Wilkosz
Gary R. Wolkovits
Eugenia I. Wright*
Karen Wyndelts
Sylvia D. Yoder

*Those whose gifts have been realized.

DESERT COUNCIL

A corporate membership category. Desert Council represents an alliance between the Desert Botanical Garden and the business community. Acknowledged in this section are annual donors of \$2,500 or more, received between June 16 - September 15, 2008.

Palo Brea (\$20,000+)

Bank of Arizona, N.A.
Wells Fargo

Palo Verde (\$10,000+)

Steve Martino and Associates

Mesquite (\$5,000+)

Bank of America
Intel Corporation

CORPORATE MATCHING GIFTS

Arizona Public Service
Bank of America Foundation
Gannett Foundation
GE Foundation

FOUNDATION GIFTS

Arizona Community Foundation
Cosanti Foundation
The Ferry Family Foundation
The Fred Maytag
Family Foundation
Maricopa Audubon Society

TENDING THE GARDEN

Listed below are donors who have made gifts of \$150+ from July 1 - September 15, 2008.

Susan & William Ahearn
Marian Alaback
Julie Hall Allison
Rebecca & Kenneth Allison
Arizona Community
Foundation
Jean & Harold Bachman
Lynn Baker & Geri Attebery
Sally & Michael Barthel
Cheryl Beard
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Marilyn Daggett
Marla Daxley
Patricia & Robert Davis

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Carole & Rich Kraemer
Karen Kuecker &
John Goranowski
Susan & Duane Kullberg
Midge Kunkel
In memory of Donald B. Kunkel, M.D.
Lucinda & David Lee
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Robert Crawford
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Audrey Jane &
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Michael Ruby
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Richard J. Smith
Alice & Richard Snell
Connie & Jim Snyder
Jane & Richard Stern
Helen Street
Olga & James Strickland
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Marsha & Charles Van Dam
The Virginia G. Piper
Charitable Trust
Nancy Walters
Wells Fargo
Cherrylee & Robert Williams
Roma & Raymond Wittcoff
Susan & Ray York

HONOR & MEMORIAL GIFTS

Honor and memorial contributions are used to provide for the Desert Botanical Garden's horticulture, education and research programs. Gifts may also be recognized with benches & plaques. From July 1 - September 1, 2008 contributions have been received from:

Honor Gifts:

In honor of Jacquie Dorrance
Gail & Stephen Rineberg

In honor of Bill George
Joan & Helge Jordan

In honor of Lisa & Dean Schwanz's 50th wedding anniversary
Miriam & Jordan Francis

In honor of Pat Smith
Jean M. Besich

In honor of Maree Stone
Good Shepherd of the Hills
Episcopal Church

Memorial Gifts:

In memory of Anne Alvarez
Inez Artico
Velma Bader

Mary, Larry & Shelly Bates
Bianca & Richard Inter
Lynn & Edwar Newhall
Margaret, Ed &
Gayle Newhall

In memory of
Sue Ann Bashore
Stephen Bashore

In memory of Erma Bombeck
Erma Bombeck
Memorial Fund

In memory of Nadine Carson
Claudia Vizcaya
Martha Vizcaya

In memory of Mary Doles
Oonagh & John Boppert
Kenneth J. Schutz

In memory of
Barney Finnegan
Carol & Tom Meissner

In memory of Mary Hignite
Arizona Arthritis &
Rheumatology Associates,
P.C.

Oonagh & John Boppert
In memory of
Joseph W. Janovic
John M. Janovic

In memory of William (Bill) McIntosh
Lena Maffeo
Mary and Tony Wheeler

In memory of Larry Melcher
Margaret Ann &
Mark McDonnell

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Cinda & Timothy Stone
Morgan Whitlock

In memory of Gary Schiller

Claudia Vizcaya
Martha Vizcaya

In memory of James Vizcaya

Claudia Vizcaya
Martha Vizcaya

In memory of Sno Waters

Barbara J. Webb

In memory of Shirley Wolf

Friends from the Geography
Dept. at the University
of Wisconsin Parkside

Rachael & Robert Jagla
Donna & Dick Smagur
Mary K. Spannagel

Laura, Joe, Dan &
Bonnie Sullivan
Goldie Thomas &
Mr. & Mrs. William
F. Thomas
Maria Mac Williams &
Mark Chiu

ANNUAL APPEAL & DONATION GIFTS

Listed below are donors who have made gifts of \$150+ from June 16 - September 15, 2008:

Lisa Sette Gallery

IN-KIND GIFTS

Listed below are donors who have made valued gifts of \$150+ from June 16 - September 15, 2008:

Marlene & Ralph Bennett
Midge Kunkle
Phoenix Coca-Cola Bottling
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Dorothy & Michael Sayre
Phyllis & Neil Stenholt
Triangle Apparel Group, L.L.C.

We attempt to ensure the accuracy of our donor's names. If you note an error or omission, please contact Fran Linowski at 480-481-8144.



The Mission Statement of the Desert Botanical Garden

The Garden's commitment to the community is to advance excellence in education, research, exhibition, and conservation of desert plants of the world with emphasis on the Southwestern United States. We will ensure that the Garden is always a compelling attraction that brings to life many wonders of the desert.

TOP 10 GIFTS

YOU COULD BE GIVING THIS HOLIDAY SEASON

The best holiday swag bags filled with bling, baubles, and glitz from the Garden Shop's selection of beautiful jewelry.



Tickets to the award-winning holiday tradition, **Las Noches de las Luminarias**, featuring 7,000 hand-lit luminarias along the Garden's paths, festive music, and delicious food and drink.

Music-lovers will thank you for tickets to the Garden's concert series, **Music in the Garden**.

Support your local agave at **Agave on the Rocks**, the Garden's annual spring margarita party.



A gift of Garden membership is always a hit and appreciated all year.

Curious for curios? The Garden Shop carries a wide variety of amazing items suitable for practically anyone!



Gifts to the Garden made in honor of your friends. How environmentally conscious you are!



A romantic evening at the Garden during **Chihuly: The Nature of Glass**. Massive, colorful glass sculptures in a desert setting. Need we say more?

Plants, plants, plants!

We've got a great selection of cacti and succulents in our Garden Shop.



Gift cards for the time-challenged gift-givers. Garden Shop Gift Cards are a fast, easy way to a plant-lover's heart.

VISIT DBG.ORG FOR ADDITIONAL INFORMATION.